

**REMARKS**

The application has been amended. It is believed that the claims are directed to a single invention for purposes of accelerating the prosecution of the present application.

Applicant previously submitted of record the PTO Form A820, which represents the documents cited in the International Search Report. Enclosed herewith are English translations of Japanese Patent Application Nos. 2002-369154 and 2003-249057 to supplement the earlier submission.

If there are any questions with regards to this matter, the undersigned attorney can be contacted at the listed phone number.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on July 17, 2006.

By: Sharon Farnus

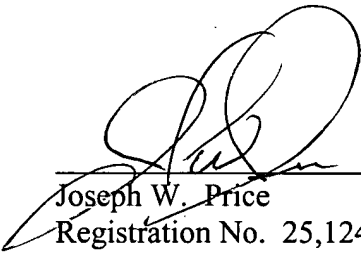
*Sharon Farnus*

Signature

Dated: July 17, 2006

Very truly yours,

**SNELL & WILMER L.L.P.**

  
\_\_\_\_\_  
Joseph W. Price  
Registration No. 25,124  
600 Anton Boulevard, Suite 1400  
Costa Mesa, California 92626-7689  
Telephone: (714) 427-7420  
Facsimile: (714) 427-7799

## PATENT ABSTRACTS OF JAPAN

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(71)Applicant : MATSUSHITA ELECTRIC IND CO  
LTD

(72)Inventor : OKADA TOMOYUKI  
IKEDA KO  
NAKAMURA KAZUHIKO

Priority number : 2001103375    Priority date : 02.04.2001    Priority country : JP

(54) IMAGE PLAYBACK EQUIPMENT FOR DIGITAL IMAGE CONTENTS, IMAGE PLAYBACK METHOD, IMAGE PLAYBACK PROGRAM, AND PACKAGE MEDIA

**PROBLEM TO BE SOLVED:** To provide a technique for putting adding new value to contents and a technique for managing the added value of contents.

[illegible]

back the image contents via the above tool. The extended application is executed via the above tool.

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## LEGAL STATUS

[Date of request for examination] 18.01.2005

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[Kind of final disposal of application other than withdrawal the examiner's decision of rejection or application converted registration]

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[Number of appeal against examiner's decision of rejection]

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[Date of extinction of right]

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**CLAIMS**

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**[Claim(s)]**

**[Claim 1]** It is the picture reproducer which reproduces the package media supplied from the outside. Said package media The image contents which store image data and the playback control information which controls playback of said image data in a predetermined data format, The extended application software which uses said image contents is included. Said picture reproducer One operating system chosen from the operating system of two or more classes as software which is held beforehand and performed by the internal memory, The middleware which absorbs the difference in the function corresponding to the class of said operating system, It operates on said middleware and has the player application software which reproduces said image contents. Said middleware It has a class library containing the tool used in order for said player application software to reproduce said package media or to perform said extended application software. Said player application software Said tool contained in said class library of said middleware is minded. Said image contents of said package media are systematically reproduced according to said predetermined format. Said extended application software Picture reproducer performed through said tool contained in said class library of said middleware using said image contents contained in the same package media.

**[Claim 2]** Said picture reproducer is picture reproducer according to claim 1 with which said playback control information is analyzed and said extended application software sets either of said tools with which it is contained in said class library of said middleware as an invalid by the comparison of the playback limit information within said playback control information, and said playback status information including the playback limit information corresponding to [ have managed playback status information and ] said playback status information in said playback control information of said package media.

**[Claim 3]** It is the image reproduction approach which reproduces the package media supplied from the outside with picture reproducer. Said package media The image contents which store image data and the playback control information which controls playback of said image data in a predetermined data format, The extended application software which uses said image contents is included. Said image reproduction approach The step which reads into the internal memory of said picture reproducer one operating system chosen from the operating system of two or more classes, and starts it, It is the middleware which absorbs the difference in the function corresponding to the class of this operating system. The application software which operates on this middleware reproduces said package media, or The step which reads the middleware which has a class library containing the tool to be used into said internal memory of said picture reproducer, and starts it in order to perform, The step which operates on said middleware, reads into the internal memory of said picture reproducer the player application software which reproduces said image contents, and starts, Operate on said middleware, read into the internal memory of said picture reproducer the extended application software which uses said image contents, and with the step which starts, and said player application software The tool contained in said class library of said middleware is minded. Said image contents of said package media by the step systematically reproduced according to said predetermined format, and said extended application



software The image reproduction approach containing the step performed through said tool contained in said class library of said middleware using said image contents.

[Claim 4] It is the image reproduction program which reproduces the package media supplied from the outside. Said package media The image contents which store image data and the playback control information which controls playback of said image data in a predetermined data format, The extended application software which uses said image contents is included. Said image reproduction program One operating system chosen from the operating system of two or more classes as software which is held beforehand and performed by the internal memory, The middleware which absorbs the difference in the function corresponding to the class of said operating system, It operates on said middleware and has the player application software which reproduces said image contents. Said middleware It has a class library containing the tool used in order for said player application software to reproduce said package media or to perform said extended application software. Said player application software Said tool contained in said class library of said middleware is minded. Said image contents of said package media are systematically reproduced according to said predetermined format. Said extended application software The image reproduction program performed through said tool contained in said class library of said middleware using said image contents contained in the same package media.

[Claim 5] The record medium which stores said image reproduction program according to claim 4 and in which computer reading is possible.

[Claim 6] They are the package media which are supplied to picture reproducer from the outside and reproduced with this picture reproducer. Said package media The image contents which store image data and the playback control information which controls playback of said image data in a predetermined data format, The extended application software which uses said image contents is included. Said picture reproducer One operating system chosen from the operating system of two or more classes as software which is held beforehand and performed by the internal memory, The middleware which absorbs the difference in the function corresponding to the class of said operating system, It operates on said middleware and has the player application software which reproduces said image contents. Said middleware It has a class library containing the tool used in order for said player application software to reproduce said package media or to perform said extended application software. Said player application software Said tool contained in said class library of said middleware is minded. Said image contents of said package media are systematically reproduced according to said predetermined format. Said extended application software Package media performed through said tool contained in said class library of said middleware using said image contents contained in the same package media.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the package media which recorded digital image contents, such as a movie, the picture reproducer and the image reproduction approach, and an image reproduction program. It is related with E package which is the technique which replaces DVD especially.

[0002]

[Description of the Prior Art] (Package business) Transition of package business is explained first. Drawing 1 shows the circulation gestalt of the package business of the present and future. As shown in drawing 1, circulation of package business is how to offer to a user contents, such as a movie which a content provider possesses.

[0003] In recent years, a user is provided with contents, such as a movie, from a content provider with DVD. Compared with the circulation on the conventional videocassette, the effectiveness of circulation business, such as reduction of the display spaces in reduction of the manufacturing cost by La Stampa, reduction of the transportation cost by the small tooth space, and a store, was able to be greatly raised with DVD. Added value, such as interactive functions, such as high definition, quality of loud sound, a random access function, and a multi-angle type, joins DVD, and there is a big merit in it compared with a videocassette.

[0004] Next, worth of contents is explained. Drawing 2 is the conceptual diagram showing worth of contents. The videocassette from the former was recording the title on the tape at the linear. That is, as well as the show in a movie theater, it is the medium which supplies the movie itself and did not have the value beyond it. DVD has added value, such as a multi-angle type, an interactive function called a multi-story, title selection from a menu, random access, voice, and multilingual correspondence of a title, besides the value which the movie itself has.

[0005] Worth of contents depreciates according to various factors. For example, music has "epidemia." Many of music contents change epidemia with time amount, and the value depreciates remarkably. A movie has the inclination similarly. On the other hand, the "story" is contained in the movie. The viewer who wants to know expansion of the talk looks at a continuation. On the contrary, the motive to see a continuation will fade for the viewer who gets to know a story. That is, worth of contents depreciates for an individual. The thing with little people who see the same movie every day to a thing with much people who listen to the same music every day is for above-mentioned. Worth of the commercial scene which the contents have decreases gradually as the persons who saw the movie will increase in number, if it thinks statistically.

[0006] Drawing 3 is drawing having shown the movie business doubled with worth of contents in a time-axis at it. An axis of abscissa shows time amount and the axis of ordinate shows worth of contents. On the movie, it has the peculiar business model called a time shift. A movie is shown first in a movie theater and sale is performed for individuals as software packages, such as DVD, after that. Then, satellite broadcasting service, KEPURU television, etc. are used and it is Pay. Per Charged viewing and

listening called View is presented, and the free broadcast by the terrestrial station is presented by the last. In terrestrial broadcasting, of course, although an individual can carry out free viewing and listening, he supports this by the advertising revenue by the company sponsor.

[0007] (Example of DVD) Here, the technique which supports the conventional package business for DVD for an example is explained. As long as there is especially no notice, DVD said in the text points out DVD-ROM, i.e., the disk only for playbacks, and has not pointed out the disk in which rec/play, such as DVD-RAM, is possible.

[0008] Drawing 4 shows the structure of the data currently recorded on DVD. the field called the lead-in groove which there is [ lead-in groove ] about 4.7GB (G cutting tool) of record section in a DVD disk, and carries out stable rotation of the servo of a DVD drive -- then, the logical address space which records binary [ of "0" or "1" ] continues, and the lead-out field which finally shows termination of a disk record section continues.

[0009] The navigation data with which it was, and the file system field described the scenario of AV data or a movie continuously first are recorded on the logical address space. A file system is a system which manages data as a file and a directory (folder), and AV data and navigation data which are recorded on the DVD disk can be altogether treated as each directory and a file through a file system.

[0010] As shown in drawing 4, on the DVD disk, the directory which stores the DVD video title called "VIDEO\_TS" is placed directly under the root directory. In this directory, files which recorded the navigation information which realizes scenario management and an interactivity, such as "VIDEO\_TS.IFO" and "VTS\_01\_0.IFO", and the file of "VTS\_01\_0.VOB" which recorded AV data are placed.

[0011] As AV data, the stream based on ISO/IEC13818 (MPEG) is recorded. In DVD, one MPEG stream is called VOB and recorded on the file two or more VOB(s) of whose have an extension ".VOB". Although two or more VOB(s) are recorded on one VOB file in order, when a VOB file exceeds 1GB, it is divided and recorded on two or more VOB files bordering on 1GB.

[0012] Navigation information is divided roughly into the information which manages the entire disk called "VMGI", and the information about title each which is called "VTSI." In "VTSI", the "PGC information" which has "Cell" which makes a part or all of "VOB (MPEG stream)" one playback unit is included. "Cell" defines a playback sequence. It is important that it is the address information on the basis of a logical address space which is used in order that "Cell" may show a part or all of "VOB" here.

[0013] For example, since record, edit, and elimination are repeatedly performed for a file, even if it is the same file in the case of HDD on a computer (hard disk drive), there is no guarantee currently recorded on the always same location on HDD. The greatest description of a file system is being able to treat a file similarly from application, wherever the file may be recorded on HDD.

[0014] DVD has taken the DS which was conscious of the logical address, though a file system is carried in order to aim at fusion of AV and PC. The engine performance of a noncommercial AV equipment does not reach distantly [ PC ]. It was doubtful even of especially the engine performance of that time of a DVD appearance even carrying a file system. However, as for DVD, not only a public welfare device but use with PC was expected greatly. In fact, a DVD regenerative function loading machine is not new with the latest PC product.

[0015] That is, both the engine performance with DVD realistic as a public welfare machine and access from PC were desired. For this reason, with PC, data could be accessed through the file system, and on the other hand, with the noncommercial AV equipment without the function of a file system, DVD was designed so that access might be possible for data with the logical address base. In this way, it became possible for DVD to gain broad support of both a public welfare device and PC.

[0016]

[Problem(s) to be Solved by the Invention] (Technical problem of DVD specification) Drawing 1 explains the circulation gestalt of the package business of the present and future. As shown in drawing 1, circulation of a package has become by the explosive spread of the Internet, and utilization of digital broadcast not only in the approach which used the physical disk.

[0017] Stream distribution of some contents has already been carried out by the Internet. Moreover, the

set top box (STB) which carried the hard disk drive (HDD) as a temporary storage medium has appeared in recent years. Digital broadcast is accumulated in this hard disk drive, and it can view and listen later. Thus, the environment when performing contents business is changing dramatically.

[0018] Moreover, it is thought that circulation of movie contents is also shifted from circulation by physical medias, such as DVD, to the electronic circulation which used a digital broadcast wave and the Internet.

[0019] Drawing 5 is drawing showing the configuration of a domestic AV equipment. The environment which encloses an AV equipment has changed a lot by the Internet and digital broadcast. For example, connection between devices, such as connection between the Internet connectivity of an AV equipment, the set top box (STB) which receives digital broadcast, and a recorder and television, i.e., a domestic network, is indispensable.

[0020] The contents distribution especially by digital broadcast is not the pull mold according to a demand but the push type which sends data to a target on the other hand from a user like the Internet. That is, on the other hand, contents are sent into a target to all viewers. In this case, the system which prevents the copyright of contents is needed. The system of protection of copyrights is being put in practical use by DRM (digital light management) which are encoding technology and its system technology.

[0021] Next, a needed technique is a technique of managing the value which contents have. For example, as shown in drawing 2, the value management method of the contents doubled with the stage or the circulation situation is needed like [ DVD / existing ] the time shift model indicated to be the added value which progressed further by drawing 3. the existing DVD -- a disk -- selling out (sell-through) -- since it is considering as the base, it has neither an addition of new added value, nor structure whose management etc. is possible.

[0022] (Technical problem of contents circulation) Flooding of a digital broadcast system is mentioned as a technical problem of contents circulation. In Japan, CS digital broadcast and BS digital broadcasting are put in practical use, and the new satellite broadcasting service and terrestrial digital broadcast which are further called CS110" tend to start. Moreover, although there is a different digital broadcast system for each country in Europe, the system of each country is going in the unification direction as a DVB (Digital Video Broadcasting) system. However, this DVB system differs from a Japanese system. The original method called ATS even in North America is examined.

[0023] In digital broadcast, systems differ for every area still more intricately than NTSC of the present analog broadcasting, a PAL system, etc. For this reason, in the case of the contents for the whole world like a movie, authoring of every area is needed and the jump of manufacture cost is expected.

[0024] The package for electronic distribution of the whole-world unification which carries out electronic distribution of the contents equivalent to DVD as the one solution approach can be considered. However, if this package for electronic distribution is replaced with charged broadcast or free terrestrial broadcasting as it is, since free terrestrial broadcasting can also enjoy contents completely equivalent to DVD, a user's DVD customer interest is reduced and there is a danger of collapsing DVD business.

[0025] Therefore, the technique of giving new added value according to the distribution stage of contents, and the technique of managing added value, such as preparing a playback use limit of contents according to a user, are needed.

[0026] Then, the purpose of this invention is solving an above-mentioned technical problem "added value's being given to contents", and "value management of the contents doubled with the stage or the circulation gestalt." It is specifically offering E package which is the technique which builds the new contents business corresponding to the network age.

[0027]

[Means for Solving the Problem] The picture reproducer concerning this invention is picture reproducer which reproduces the package media supplied from the outside. Said package media The image contents which store image data and the playback control information which controls playback of said image data in a predetermined data format, The extended application software which uses said image contents is

included. Said picture reproducer One operating system chosen from the operating system of two or more classes as software which is held beforehand and performed by the internal memory, The middleware which absorbs the difference in the function corresponding to the class of said operating system, It operates on said middleware and has the player application software which reproduces said image contents. Said middleware It has a class library containing the tool used in order for said player application software to reproduce said package media or to perform said extended application software. Said player application software Said tool contained in said class library of said middleware is minded. Said image contents of said package media are systematically reproduced according to said predetermined format. Said extended application software It performs through said tool contained in said class library of said middleware using said image contents contained in the same package media.

[0028] This picture reproducer reproduces the image contents of E package. The above-mentioned operating system is Mac by the Windows (trademark) for example, by Microsoft Corp., and Apple Computer, Inc. OS (trademark) or Linux of freeware can be used. In addition, an operating system is not restricted to the above-mentioned thing, but includes OS by each manufacturer. Moreover, as the above-mentioned middleware, Java (trademark) can be used, for example. The difference in a function can be absorbed also when the class of operating system changes with these middleware. Moreover, the above-mentioned player application software reproduces the image contents of package media. Furthermore, as extended application software, it is the game application using the image contents of the above-mentioned package media etc., for example. In addition, the above-mentioned player application software and extended application software operate on the above-mentioned middleware. Middleware has a class library containing the tool used in case the above-mentioned application software reproduces image contents or performs. The tool contained in this class library means the class which realizes a various function, and its member function. Furthermore, this image regeneration system can also be constituted by performing software distributed through the network.

[0029] Moreover, this picture reproducer has managed playback status information, and said playback control information of said package media analyzes said playback control information including the playback limit information corresponding to said playback status information, and it sets either of said tools with which said extended application software is contained in said class library of said middleware by the comparison of the playback limit information within said playback control information, and said playback status information as an invalid.

[0030]

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**TECHNICAL FIELD**

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**PRIOR ART**

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[0015] That is, both the engine performance with DVD realistic as a public welfare machine and access from PC were desired. For this reason, with PC, data could be accessed through the file system, and on the other hand, with the noncommercial AV equipment without the function of a file system, DVD was designed so that access might be possible for data with the logical address base. In this way, it became possible for DVD to gain broad support of both a public welfare device and PC.

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**EFFECT OF THE INVENTION**

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[Effect of the Invention] The image reproduction system of this invention aims at it not only considering as the picture reproducer which reproduces a movie simply, but realizing various applications. For this reason, in this picture reproducer, the middleware which absorbs the difference in the function corresponding to the class of operating system as software which is beforehand read into an internal memory and is performed is included. This middleware has the class library containing the tool used in order for player application to reproduce image contents or to perform extended applications, such as game application. Specifically, this middleware has the class library for E package as mentioned above. Tools are the class used in order to realize each function, its member function, etc. here. Moreover, on the functional list currently recorded on the playback control information (management information) included in package media, the function with which the application containing player application or game application is provided by the class library is described. Moreover, the comparison with the status information which this functional list has the status information for every function, and the image regeneration system itself has enables it to control refreshable contents with a functional level by each image regeneration system.

[0209] Consequently, it becomes possible to control various applications realized with E package according to business, the gestalt of service, or quality.

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**TECHNICAL PROBLEM**

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[Problem(s) to be Solved by the Invention]

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**MEANS**

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[Means for Solving the Problem] The picture reproducer concerning this invention is picture reproducer which reproduces the package media supplied from the outside. Said package media The image contents which store image data and the playback control information which controls playback of said image data in a predetermined data format, The extended application software which uses said image contents is included. Said picture reproducer One operating system chosen from the operating system of two or more classes as software which is held beforehand and performed by the internal memory, The middleware which absorbs the difference in the function corresponding to the class of said operating system, It operates on said middleware and has the player application software which reproduces said image contents. Said middleware It has a class library containing the tool used in order for said player application software to reproduce said package media or to perform said extended application software. Said player application software Said tool contained in said class library of said middleware is minded. Said image contents of said package media are systematically reproduced according to said predetermined format. Said extended application software It performs through said tool contained in said class library of said middleware using said image contents contained in the same package media.

[0028] This picture reproducer reproduces the image contents of E package. The above-mentioned operating system is Mac by the Windows (trademark) for example, by Microsoft Corp., and Apple Computer, Inc. OS (trademark) or Linux of freeware can be used. In addition, an operating system is not restricted to the above-mentioned thing, but includes OS by each manufacturer. Moreover, as the above-mentioned middleware, Java (trademark) can be used, for example. The difference in a function can be absorbed also when the class of operating system changes with these middleware. Moreover, the above-mentioned player application software reproduces the image contents of package media. Furthermore, as extended application software, it is the game application using the image contents of the above-mentioned package media etc., for example. In addition, the above-mentioned player application software and extended application software operate on the above-mentioned middleware. Middleware has a class library containing the tool used in case the above-mentioned application software reproduces image contents or performs. The tool contained in this class library means the class which realizes a various function, and its member function. Furthermore, this image regeneration system can also be constituted by performing software distributed through the network.

[0029] Moreover, this picture reproducer has managed playback status information, and said playback control information of said package media analyzes said playback control information including the playback limit information corresponding to said playback status information, and it sets either of said tools with which said extended application software is contained in said class library of said middleware by the comparison of the playback limit information within said playback control information, and said playback status information as an invalid.

[0030] The image reproduction approach concerning this invention is the image reproduction approach which reproduces the package media supplied from the outside with picture reproducer. Said package media The image contents which store image data and the playback control information which controls playback of said image data in a predetermined data format, The extended application software which

uses said image contents is included. Said image reproduction approach The step which reads into the internal memory of said picture reproducer one operating system chosen from the operating system of two or more classes, and starts it, It is the middleware which absorbs the difference in the function corresponding to the class of this operating system. The application software which operates on this middleware reproduces said package media, or The step which reads the middleware which has a class library containing the tool to be used into said internal memory of said picture reproducer, and starts it in order to perform, The step which operates on said middleware, reads into the internal memory of said picture reproducer the player application software which reproduces said image contents, and starts, Operate on said middleware, read into the internal memory of said picture reproducer the extended application software which uses said image contents, and with the step which starts, and said player application software The tool contained in said class library of said middleware is minded. Said image contents of said package media by the step systematically reproduced according to said predetermined format, and said extended application software The step performed through said tool contained in said class library of said middleware is included using said image contents.

[0031] The image reproduction program concerning this invention is an image reproduction program which reproduces the package media supplied from the outside. Said package media The image contents which store image data and the playback control information which controls playback of said image data in a predetermined data format, The extended application software which uses said image contents is included. Said image reproduction program One operating system chosen from the operating system of two or more classes as software which is held beforehand and performed by the internal memory, The middleware which absorbs the difference in the function corresponding to the class of said operating system, It operates on said middleware and has the player application software which reproduces said image contents. Said middleware It has a class library containing the tool used in order for said player application software to reproduce said package media or to perform said extended application software. Said player application software Said tool contained in said class library of said middleware is minded. Said image contents of said package media are systematically reproduced according to said predetermined format. Said extended application software It performs through said tool contained in said class library of said middleware using said image contents contained in the same package media.

[0032] Moreover, the record medium concerning this invention in which computer reading is possible stores said image reproduction program.

[0033] They are the package media which the package media concerning this invention are supplied to picture reproducer from the outside, and are reproduced with this picture reproducer. Said package media The image contents which store image data and the playback control information which controls playback of said image data in a predetermined data format, The extended application software which uses said image contents is included. Said picture reproducer One operating system chosen from the operating system of two or more classes as software which is held beforehand and performed by the internal memory, The middleware which absorbs the difference in the function corresponding to the class of said operating system, It operates on said middleware and has the player application software which reproduces said image contents. Said middleware It has a class library containing the tool used in order for said player application software to reproduce said package media or to perform said extended application software. Said player application software Said tool contained in said class library of said middleware is minded. Said image contents of said package media are systematically reproduced according to said predetermined format. Said extended application software It performs through said tool contained in said class library of said middleware using said image contents contained in the same package media.

[0034] These package media are E packages which have high added value. Namely, it not only reproduces the image contents of these package media by player application software, but it can perform by relating the game application software using the above-mentioned image contents etc. Moreover, by these package media, the scenario information which specifies the playback sequence of image data may be included in playback control information. Furthermore, playback control information may include the regeneration level information which specifies the level which restricts playback of image contents, and

use of game application.

[0035]

[Embodiment of the Invention] Hereafter, the desirable operation gestalt which starts this invention with reference to a drawing is explained. In addition, in a drawing, the same sign shows the same thing.

[0036] (Gestalt of new business) As drawing 2 and drawing 3 explained, worth of movie contents decreases with time amount. Furthermore, in order to advance electronic circulation globally, the existing business model must be changed.

[0037] The package media (henceforth "E package") containing the digital image contents concerning the gestalt of operation of this invention introduce the application which is equal to the movie itself as drawing 2 shows as added value. Thereby, worth of a package can be raised. Moreover, the value drawn by application is controlled and level is given to a package, and even if it is the same title, it enables it to attain differentiation, as drawing 5 shows.

[0038] For example, level is prepared by considering the package which enabled "package with a limit", and viewing and listening of only movie contents for the package which restricted a "full package" and use of a part of applications for the package which made all applications usable as a "free package", and value is controlled as drawing 8 shows.

[0039] In the package business shown by drawing 3, a full package can be circulated instead of the existing DVD, and a package with a limit can circulate a free package instead of free broadcast instead of charged broadcast, respectively. With the gestalt of this operation, although only three kinds of level explains, package level can be subdivided more and circulation business can also be developed finely.

[0040] (Configuration of various specification) CD ( drawing 9 (a)), DVD ( drawing 9 (b)) and DVB-MHP ( drawing 9 (c)) which are typical media using drawing 9, and E package ( drawing 9 (d)) -- the configuration of each specification and an outline are explained. In addition, VHS consists of physical properties and electrical signals, and since other specification of having DS differs greatly, the explanation about VHS is omitted.

[0041] CD consists of data sampled with the sampling frequency of 44.1kHz, and index information on each track (music) called TOC (Table Of Contents). CD playback machine reads TOC, reads the corresponding data of music in response to the request from a user, for example, "playback of a track 3" etc., performs a DA translation and is reproduced.

[0042] Illustration is Video which improved CD although not carried out. AV stream and PSD (Programable Sequence Descriptor) used as the index are recorded on CD. According to actuation of a user, a Video CD playback machine performs corresponding read-out and corresponding decoding of AV stream, and is reproduced. CD and Video DS is made into specification, and according to specification, both of CD are interpreting DS and are performing the playback device.

[0043] The concept of a virtual machine was introduced into DVD. This is the configuration of having a data-processing function and a register (exclusive memory), like CPU. Actuation of a player changes with actuation of a user or values of a register to the scenario data described as DS.

[0044] If an easy example is explained, a story can be divided by whether the viewer of a movie is an "adult", or it is "a less than 18-year-old child." This is a function called a parental lock. It cuts so that the sexual scene and violence scene in a movie may not be shown to a child by this. A story and an angle type are also changeable whether another user is a male or you are a woman.

[0045] DVD defines the model of a player (it is also called picture reproducer) of operation other than static DS as specification as a virtual machine. By this, the platform of different hardware among player manufacturers or software and the difference in the software implementation of player application are absorbed, and compatibility between players is realized.

[0046] Next, DVB-MHP (Digital Video Broadcasting Multimedia Home Platform) is explained. DVB-MHP is the digital broadcasting standard of the next generation to which the standardization is progressing in Europe. The greatest description of this specification is using the middleware called Java (trademark).

[0047] Java (trademark) is Sun in order to improve the compatibility between platforms. It is middleware which Microsystems advocated. On the computer which carried Java (trademark), and a

device, it is the greatest description that all Java (trademark) applications can be operated and the use range of application can be greatly extended across the boundaries of a platform.

[0048] Also in domestic, he is NTT. There is movement toward adoption of Java (trademark) by Havi which aims at the I mode of DoCoMo, and the network between AV equipments.

[0049] DVB-MHP defines the object class which specialized in DVB-MHP, namely, processes the image program and data program of television broadcasting with installation of Java (trademark), and its interface.

[0050] DVB-MHP has not determined static DS as compared with the conventional specification, and differs greatly in that the interface on middleware is defined as specification.

[0051] For this reason, all the things that can be made as a computer program can be used for application. On the other hand, no systems which make application are formed. Therefore, the application used is closer to the direction of a computer game than AV systems, such as music and a movie, as compared with the conventional contents business.

[0052] Middleware is carried like DVB-MHP and it enables it to operate various applications on a player with E package of this invention. However, it is more convenient to have the static DS of a conventional type and a player actuation model like a virtual machine, in order to make greatest contents called a movie efficiently.

[0053] Then, E package of this invention defines static DS and a player actuation model for movie contents. Moreover, this E package offers the interface over the application which raises worth of movie contents.

[0054] (Player model) Drawing 10 is a player model conceptual diagram on middleware. The middleware used here is object thinking programming language like Java (trademark). Since the many are exhibited in the homepage on books or the Internet about object thinking programming language and its base class itself, the processing inside the detail, especially a class library is omitted.

[0055] Various functions, such as a title and a language setup, are defined as a class and its member function by the middleware of E package. The instance is generated at the time of activation, and each class is accessed from applications, such as player application.

[0056] The class used here is explained briefly. The ellipse in drawing 10 shows the instance of each class.

[0057] A "Title class" is a class only for E packages equivalent to each movie title. This class has scenario information, such as a chapter, the address information of AV data, the interface information offered to application.

[0058] All of such information are described by the playback control information file (lower berth in drawing). The attribute described by playback control information turns into the attribute of an object as it is. For example, the level attribute of a Title instance is specified with the attribute level of the playback control information Title. It mentions later for details.

[0059] Moreover, a Title class has a member function (Methods) for playback control. For example, playback of a title is performed by calling a "Play()" function, and a playback halt is performed by calling a "Stop()" function.

[0060] The function is controlled by playback control information also for these member functions (Methods). For example, SetRate (special renewal function) of a Title instance is <SETRATE of playback control information. Use of the function is restricted by level="">. It mentions later for details.

[0061] A "Audio class" is a class equivalent to an audio stream. Instantiation of this class is carried out for every audio stream. An instance has an attribute, language information, etc. on a stream. For example, the language information on an audio stream is <AUDIO. It carries out like language="Japanese"> and defines as playback control information. This attribute value can be taken out from an Audio instance by member function getLang().

[0062] E package supports multi-language like DVD, and a user can do selection of a favorite voice stream. Player application receives the request from a user and specifies a corresponding instance to a Title class instance (set). At this time, as mentioned above, correspondence language is investigated using member function getLang() of each Audio instance, the Audio instance which suited a user's

request is chosen, and it specifies to a Title instance (set).

[0063] A "Subtilte class" is a class equivalent to a title stream, and has the almost same function as an Audio class.

[0064] A "Socket class" is a class which communicates with other players (picture reproducer), a server, etc. via a network.

[0065] A "Loader class" is a class which incorporates other applications etc. dynamically. The application dynamically incorporated by the Loader class is defined by the playback control information file. In reproducing other applications using player application, it usually uses a Loader class. However, when application equipped also with the player function is performed, it is not necessary to necessarily call a Loader class.

[0066] A "Event class" is a class which generates the event trigger described in the scenario. For example, it can use for displaying a dialog message on a user in the middle of a movie etc.

[0067] A "Cursor class" is a class which tells a user's cursor advance to application. Migration of cursor with remote control etc. is caught.

[0068] A "Button class", a "Canvas class", and a "Frame class" are classes which display a carbon button, canvas, and a frame on a screen, respectively. These classes generate an instance and drawing is performed by what is incorporated on a screen (add).

[0069] Especially a Canvas class is a class which draws an animation. The animation can be displayed on a screen by what a Title instance is incorporated for on the instance of this Canvas class (add). Moreover, animation display can be terminated by what a Title instance is removed for (delete).

[0070] A "Text class" is a class which performs a text display on a screen. By the constructor, a Text instance can be generated and the text of arbitration can be drawn on a screen by what a Text instance is set for on a Canvas instance (add).

[0071] (Example of application) The application described below is realizable with the configuration of the player model mentioned above.

[0072] It is the example of a simple DVD player which is shown in drawing 11 . DVD player application is also mounted on middleware as one application as shown in drawing 11 . Player application generates an instance from the class library offered on middleware, is calling the member function and reproduces a title.

[0073] For example, a menu is displayed on a screen by setting the menu instance made from a Title class as a Canvas instance (add), and the request from a user is received. A user chooses the title reproduced using cursor.

[0074] The request from a user is sent to a title or a menu through the instance of a Cursor class. For example, with a menu, the instance of the Title class corresponding to the title which the user chose is acquired, it puts on a Canvas instance (add), and playback (play) is performed.

[0075] It is the example of game application which is shown in drawing 12 . In drawing 12 , game application is started instead of player application. Game application chooses the screen of arbitration from the title in a package, and shows it as a background screen of a game. Game application carries 3D polygon image on a background image, and advances the game. Fundamental actuation is the same as the example of the player application mentioned above, and the application program has replaced it with the game application instead of exclusive player application.

[0076] Of course, it is also possible to control a background screen finely and to perform the display synchronized with the game.

[0077] It is the link structure between titles which is shown in drawing 13 . As mentioned above, much movie contents are recorded on the home server. As it is scattering by each home which movie title is actually recorded and it is shown in drawing 13 , the structure over between titles cannot be specified uniquely.

[0078] So, with E package of this invention, it had the information on a link place for every title, and the configuration in which only an actually effective link place becomes effective at the time of playback is taken.

[0079] For example, "Title1" has the link information of "Title2", "Title3", "Title5", and "Title6." On

the other hand, "Title5" does not exist on a home server. In this case, the effective link at the time of "Title1" playback is set to "Title2", "Title3", or "Title6." Thus, it makes it possible to select only a dynamically refreshable link.

[0080] (Configuration of specification) Drawing 14 is drawing showing the configuration of specification. As shown in drawing 14, E package specification is constituted from three PERT by the Lord of a player model, DS, and AV data.

[0081] The player model is constituted as a class library of object oriented programming language, carries out instantiation of the functions, such as a menu and a title, based on playback control information, respectively, and provides application with them.

[0082] DS consists of the package information which manages the whole package, menu information which described the menu, title information which described the scenario for every title, stream information which described an attribute, the address for accessing, etc. for every stream, as shown in drawing 14. A detail is explained below.

[0083] First, the directory of a package and a file structure are explained using drawing 15.

[0084] E package may be electronically distributed through the case where it circulates as an optical disk of a simple substance like DVD, and a network, and may be accumulated in HDD. The directory (it may be called a folder) explained here and a file structure are the formats that either is used in common.

[0085] E package has introduced the file system like DVD. In the file system of E package, the "PACKAGE" directory is placed directly under the root directory. This directory is a directory only for E packages, and it is not placed, other the applications, for example, conventional DVD data etc., etc. A subdirectory is further put on the bottom of the "PACKAGE" directory, and each supports one package. "abc" in drawing 15 -- "-- suiting -- obtaining --" -- it corresponds to it.

[0086] Stream data are placed with the file corresponding to each management information in the subdirectory. The first "package.xml" is a reservation file and the above-mentioned "package information" is recorded. "menu.xml" which described the menu, "title1.xml" which described the title, "title2.xml", "stream1.xml" which recorded stream information, and "stream2.xml" are put on others.

[0087] (DS detail) Drawing 16 shows the detail of package information "package.xml." According to the recording mode of XML, package information is described in the inside surrounded with the tag <PACKAGE>, and description of data has the following information as it was mentioned above.

<GENERAL> General information version information (version)

<ACCESS> Access-restriction information area information (region)

[0088] E package can limit the area which can reproduce image contents by performing access restriction to image contents using this local information. It is possible to supply starting with the time shift of a movie title, for example, North America, and to supply a title in order of Japan and Europe, Asia, and China by giving the local information which increases the refreshable area one by one to this local information, or corresponds for every area. Local information (region) has values, such as "US", "Japan", "EU", "Asia", and "China", respectively.

[0089] <UPDATE> Updating preliminary announcement information time information (data)

Operation flag of automatic acquisition (auto)

The renewal schedule of automatic of a movie title besides a scenario is described by this updating preliminary announcement information. A player (picture reproducer) can perform updating to new information through the Internet based on this information automatically.

[0090] <INTERNET> The Internet homepage information URL (URL)

This Internet homepage information is the homepage address information of the Internet related information is indicated to be. When there is a demand of an Internet access from a user, it accesses to the address which this information shows. Moreover, the above-mentioned updating preliminary announcement also acquires information based on the above-mentioned address.

[0091] <MENU> Menu information menu information file (menu)

Menu information specifies a menu information file. Menu information is described in the specified file.

[0092] <TITLE\_LIST> The title dealt with with a title list package is described by the <TITLE> tag



while being surrounded by the <TITLE\_LIST> tag.

<TITLE> Title information title number information (number)

Title information file (file)

The link information to each title is described by title information. Each title itself is described in the specified title information file.

[0093] Drawing 17 is describing the detail of menu information "menu.xml." The menu information shown below in the inside surrounded with the tag <MENU> is described.

<MENU\_PAGE> Menu page information page number (page)

Background-image information (image)

Menu page information is the information about a multi-page menu with two or more menu screens. For example, since there is a title to display in large quantities or more with 100, when it cannot display only on the page of one sheet, a multi-page menu is used.

[0094] <TITLE> Title information abscissa (column)

Ordinate (row)

Title number (title)

Object name (object)

Title name (surrounded and described by the <TITLE> tag)

The information on each title describes for every title information tag. Player application performs a menu display based on this information. Moreover, the components specified by the object are displayed on a screen as a graphical user interface. This component is offered as a function of the class library on middleware.

[0095] For example, like drawing 17, when an object (object) is a carbon button (button), the carbon button object which the graphic library of middleware offers is displayed on a menu. A display position is shown by an abscissa (column) and the ordinate (row), and a title name is displayed on a carbon button.

[0096] Drawing 18 is describing the detail of \*\* besides title information "title1.xml." The title information shown below in the inside surrounded with the tag <TITLE> is described.

<TITLE> Title information title number (title)

Level (level)

Level shows the regeneration level of this title. As mentioned above, with E package, refreshable level can be divided by preparing the regeneration level of a package according to a user's purchase situation. Specifically, level (level) has one value of a full package (full), a package (restricted) with a limit, and a free package (free). the status (Status) which a player has on the other hand -- "-- when it is full refreshable (full playback)", playback of all packages is possible, and when the status (Status) is "possible [ possible / playback with a limit / (restricted) ]" (restricted playback), it can be reproduced any of a package (restricted) with a limit or a free package (free) they are. Only the free package (free) of the case of "only a free package (free only)" is [ the attribute by the side of a player ] refreshable.

[0097] Here, although the class of package was limited to three kinds, there is nothing, it classifies into two kinds, four kinds, or the class beyond it according to an essential problem, and, of course, the number of classifications can perform a playback limit. Moreover, the method or name of a classification are not limited to an above-mentioned limitation, either.

[0098] <LINK\_LIST> The link list generated in a linked list book title is defined.

[0099] <LINK> information identification information (ID)

Link place package information (package)

Link place title information (title)

Link place chapter information (chapter)

Link place time information (time)

A link information describes for every link-information tag. Each link information is actually used within the time-line information mentioned later etc. The link information is defined in order that a player may detect the validity of a link place, and an invalid automatically at the time of title starting.

[0100] <CHAPTER\_LIST> Chapter list <CHAPTER> Chapter information initiation time information

(in)

Termination time information (out)

Playback stream information (video)

Playback title information (subtitle)

The entry of the chapter is carried out within title information.

[0101] <TIMELINE> Information, such as an event developed on a time-line information time-axis, is described in a time-line information tag. The information described is as follows.

<BRANCH> Branching information level information (level)

Message information (message)

Identification information (ID)

Effective section initiation time information (in)

Effective section termination time information (out)

Branching place title (jump)

[0102] Level information (level) is a flag which shows whether it processes according to the status (Status) of picture reproducer as it was mentioned above. For example, when the status (Status) of picture reproducer is [ the level information (level) only of "a free package (free only)" ] "a full package (full)", the branching tag (BRANCH) concerned is disregarded. Moreover, identification information (ID) supports the identification information (ID) of the LINK information mentioned above.

[0103] A player model starts playback of the location described by LINK information, when the branching demand from a user is received.

[0104] <MESSAGE> Message information level information (level)

Message information (message)

Identification information (ID)

Effective section initiation time information (in)

Effective section termination time information (out)

A title indication of the message described with a message tag is given by OSD of a player.

[0105] <TRIGGER> Event trigger information level information (level)

Event information (event)

Identification information (ID)

Generating time information (time)

When generating time of day comes, an event is given up to application. The contents are described to event information (event) and passed to application as it is.

[0106] <INTERFACE> Interface information <PLAY> Regenerative function control tag <STOP> Stop-function control tag <SETRATE> Special playback functional control tag <SETTIME> Diving regenerative function control tag <SETAUDIO> Voice setting-up-function control tag

<SETSUBTITLE> Title setting-up-function control tag [0107] Interface information (<INTERFACE>) has some player functional control tags mentioned above. Each tag corresponds to the member function of a Title instance, play, stop, setRate, setTime, setAudio, and setSubtitle, respectively. Moreover, each tag has attribute level (level) and has the value of either "full", "restricted" or "free" like the level (level) of a package.

[0108] For example, when level (level) is "full", use of the member function of a corresponding Title instance is restricted. in this case, the status (Status) which picture reproducer has -- "-- only when it is full refreshable (full playback)", use of the function concerned is possible. The level (level) of each function and the relation of the status (Status) of player application are the same as the level (level) in the package mentioned above.

[0109] Drawing 19 is describing the detail of \*\* besides stream information "stream1.xml." The title information shown below in the inside surrounded with the tag <STREAM> is described.

<STREAM> Stream information file information (file)

File information describes the stream file name for playback.

[0110] <ATTRIBUTE> The video described below in attribute information and the attribute information on an audio are surrounded and described by the attribute information tag.

[0111] <VIDEO> Video attribute information-compression information (coding)

Resolution information (resolution)

Aspect ratio information (aspect)

[0112] <AUDIO> Audio attribute information-compression information (codeing)

Bit rate information (bitrate)

The number information of channels (channel)

Language information (language)

[0113] <TIMEMAP> The time amount and size information on every VOB (it mentions later for details) are described by time map information time map information. The playback time amount length (frame number) and data size (byte count) of a unit by which the entry is carried out as each VOB are describing.

[0114] When reproducing by jumping in to the time of day of the arbitration of a playback stream, based on the result of having added the hour entry of each entry of time map information, and having detected the target VOB and having added the size information on VOB similarly, it becomes possible to draw the seeking place within a file. Thus, time map information has played the role of the filter which performs conversion of the hour entry in a stream, and address information.

[0115] <ENTRY> Entry information hour entry (duration)

Size information (size)

[0116] Drawing 20 is drawing in which the detail of \*\* besides title information "subtitle1.xml" was described.

[0117] The title for every language is described by the following information surrounded by the tag <SUBTITLE>.

<LANGUAGE> Language information language information (language)

Character information (character)

Font information (font)

Color (color)

Italic (italic)

Bold letter (bold)

Underline (underline)

As attribute value of a language information tag, font information, such as character information which shows English, Japanese, etc., such as language information and Shift JIS, and a Mincho typeface, and the qualification information on a graphic character are described.

[0118] <TEXT> Text information-display initiation time information (in)

Display termination time information (out)

Text [0119] (Stream structure) The detail of a stream is explained using drawing 21. The stream used by this example is based on international standard ISO/IEC13818 called MPEG-2. MPEG-2 consist of a video stream, an audio stream, and a system stream that multiplexes them (it bundles to one stream).

[0120] A video data is compressed into the GOP structure of having I picture (coding in a frame), P picture (time amount predicting coding), and B picture (bidirectional time amount predicting coding). The reference relation between each picture is as drawing 21.

[0121] The compressed video data is packet-ized, subsequently is pack-ized, is multiplexed with audio data, and forms one system stream.

[0122] In a multiplexing layer, VOB is formed for GOP as criteria (just before the pack which includes the next GOP head from a pack including a GOP head). GOP is language defined by the video layer, and since it is inapplicable to a definition in a system layer, it has introduced VOB.

[0123] Moreover, in this example, the thing of an MPEG-2 system stream is called VOB (Video Object).

[0124] (Player structure) Drawing 22 is the block block diagram of picture reproducer. Picture reproducer consists of I/F (108) which receives the demand from a display means (107) and a user which carries out a display output to a receiving means (101) to receive data from external tuners, such as STB, the are recording medium (102) which records data, CPU (103), program memory (104),

working-level month work-piece memory (105), the decoder (106) that decodes a stream, a monitor, and a loudspeaker. CPU (103) has a clock in the interior, and it has time information, and the playback control status information (full/restricted/free) of picture reproducer is stored in working-level month work-piece memory (105).

[0125] (Class library detail) Drawing 23 is the software configuration Fig. of the picture reproducer of E package. Centering on an operating system (it abbreviates to OS 203 and henceforth), it has a file system driver (201) and a device driver (202) under OS. A file system driver (201) offers the access environment to application for the data on a disk using a file or directory structure. A device driver (202) controls the decoder and graphic card which are the hardware device of a computer.

[0126] Moreover, middleware (204) rides on OS. For example, in the case of Java (trademark), the virtual machine (Virtual Machine and following Java(trademark) VM are called) and class library of Java (trademark) are placed. As this class library, the class library (205) for E package is also placed.

[0127] A standard class library and the class library for E package offer a class, its member function, etc. as a programming environment to application.

[0128] As application, the external application (207) offered from a third party besides the player application (206) only for E packages operates, respectively.

[0129] Drawing 24 is E package class block diagram within middleware. In middleware, a "Package class", a "Title class", a "Menu class", a "Audio class", a "Subtitle class", the "Event class", the "Link class", the "Cursor class", the "Status class", etc. are prepared as an object for E package. Hereafter, it explains separately.

[0130] A "Package class" Package class is a class called first. An instance is generated based on package information package.xml.

[0131] Drawing 25 shows processing of a Package class. Constructor Package (package) reads package.xml and acquires the attribute value of a Package instance (2501). As mentioned above, all the attribute value of an instance is described in the target management information file.

[0132] Next, authentication processing whether playback of a package is possible is performed from region information (region) and level information (level) time information (expire) (2502). When unreproducible (prohibited), an error is returned to application and it ends (2503).

[0133] An update check is performed when an authentication process is passed (permitted) (2504).

[0134] When the update preliminary announcement day has passed the time information (date) on an update tag (<UPDATE>) as compared with the time information on CPU, and when automatic update information (auto) is "yes", download from the Internet is performed (2505) and playback is resumed by new playback control information (2501).

[0135] When not performing download with an update check (2504), Menu instance generation (2506) and Title instance generation (2507) are performed, respectively.

[0136] A Package instance has a getMenu member function ( drawing 25 (b)) and a getTitles member function ( drawing 25 (c)). After Package instance generation, application can call this function and can obtain Menu and each Title instance, respectively.

[0137] A "Title class" Title class is a class which performs playback control of a title. An instance is generated for every title and drawing to a screen is performed by arranging an instance on a Canvas instance (add). Moreover, title playback is controlled by the call of a member function.

[0138] Drawing 26 and drawing 33 show processing of a Title class. Constructor Title (title) reads title.xml at the same time it is started (2601), and it generates a Link list inside based on Link\_LIST (2602). At this time, it confirms whether an object title is in an accessible location, and when it cannot access, it deletes from a list. Although it specifically checks whether the file concerned exists using a network protocol etc., since it is not directly related to this invention, detailed explanation is omitted.

[0139] Next, a Chapter list is generated (2603), the attribute information file (for example, stream.xml) of the stream which Chapter refers to is read (2604), and Audio and a Subtitle instance are generated (2605).

[0140] Next, a Timeline list is generated (2606), based on TIMELINE information, a function list is generated based on INTERFACE information (2607), and, finally a Cursor instance is generated (2608),

and it prepares so that it can respond to a demand from remote control (I/F).

[0141] The Title class has various member functions. Playback (play), a halt (stop), a reproduction speed setup (setRate), and a playback location (setTime) are functions which control AV playback directly. These provide application with the function which a decoder offers as it is. For example, if play is called from application, effective/invalid of a function are checked, and when effective, playback initiation is directed to a decoder.

[0142] For example, the case where a renewal function (play) is called from application is considered. At this time, a renewal function (play) compares a use limit of the function concerned from the refreshable condition (full playback/restricted playback/free only) of a player, and a function list (2611). Activation of a function is started when the function concerned is usable (2612). On the other hand, processing of a function is stopped when the function concerned is unusable.

[0143] Here, the relation between effective/invalid of a function is arranged to the following table.  
 level = full restricted free Status = full playback Effective Effective Effective restricted playback An  
 invalid Effective Effective free only invalid Invalid The effective above-mentioned table is in agreement not only with the effective invalid of the function of a Title instance but the criteria which judge whether it is reproducible to own level (level) of a package.

[0144] Control of voice and a title has getAudio which acquires an instance with the stream for every language within a title, i.e., attribute value, getSubtitle, and setAudio and setSubtitle which set up the stream to reproduce.

[0145] getAudio and getSubtitle pass the Audio instance and Subtitle instance which were generated by the Title constructor to application as each return value (2621). Application sets up a playback stream as an argument of setAudio or setSubtitle, using the instance obtained here as it is.

[0146] With setAudio and a setSubtitle function, it is confirmed first whether the function concerned is effective (2631). Specifically, a use limit of the refreshable condition (full playback/restricted playback/free only) of picture reproducer and the function of a function list concerned is compared. When the function concerned is usable, \*\* [ according to the attribute value of the received instance it sets playback stream attribute value as a decoder ] (2632). On the other hand, processing of a function is stopped when the function concerned is unusable.

[0147] The comparison with the status of picture reproducer and a function is the same as the table mentioned above.

[0148] In addition to this, a Title class has enableEvent in event processing starting, and has an enableLink function in title link processing starting.

[0149] An enableEvent function processes the time-line information described using Title information (<TIMELINE>), i.e., branching information, (<BRANCH>), message information (<Message>), and event trigger information (<TRIGGER>). If an enableEvent function is called, it will start a thread inside (3301). The started thread continues performing the following loop-formation processings. Playback time information is supervised and it checks for the effective time of day specified by each event in a time line list, for example, branching information, (<BRANCH>), message information (<Message>), or event trigger information (<TRIGGER>) (3302). When effective time of day has come, it judges whether as compared with the refreshable information (Status) on picture reproducer (3303), each event can perform with the picture reproducer concerned.

[0150] When each event can be performed, it checks whether it is branching (BRANCH) whose class of event needs the request from a user (3304).

[0151] In branching (BRANCH), it progresses to a request receptionist (3305) from a user, and it carries out a loop formation so that it may continue waiting for a request till the effective time (it specifies by out) of branching (BRANCH) (3306). When an effective time (out) goes out without receiving a request, it returns to the head (3302) of a loop formation again. When the request from a user is received by the effective time (out), a branching place title Title instance (it specifies by jump) is generated, and it progresses to playback of the title concerned (3307).

[0152] At step 3304, by branching (BRANCH), when there is nothing (i.e., when the processing concerned is judged to be a message (MESSAGE) or an event trigger (TRIGGER)), it progresses to step

3308, and the processing concerned judges a message (MESSAGE) or an event trigger (TRIGGER). When this processing is a message (MESSAGE), a Text instance is generated from the specified message information (message) (3309), and a Text instance is displayed on a Canvas instance (3310). (add) Moreover, a Text instance is eliminated to waiting (3311), and display period termination (out) and coincidence (from a Canvas instance to delete) (3312), and it returns to a loop-formation head (3302) till a message indicator period (out).

[0153] At step 3308, when the processing concerned is judged to be TRIGGER, an Event instance is generated (3313), the function (eventExec) implemented by application is performed (3314), and it returns to a loop-formation head (3302).

[0154] A "Menu class" Menu class is a class which displays the menu derived from the Title class. Instantiation is carried out for every same Menu as a title, and a screen display is carried out by putting on a Canvas class.

[0155] Drawing 27 shows processing of a Menu class. constructor Menu() should read menu information file menu.xml (2701), and should pass the processing (2702) as a Title class -- generation (2703) and a head menu page are displayed for a menu page (2704), and menuThread which processes the event from Cursor is started ( drawing 27 (2705) (a)).

[0156] The contents displayed as each page are described that drawing 17 explained by the menu page within MENU information (<MENU\_PAGE>). A carbon button is made based on the title in a menu page (<TITLE>), and it is displayed on a screen.

[0157] In the case of a multi-page menu, it moves to degree page ( drawing 27 (2711) (b)) by member function nextPage, and it moves it to the display of the last page (2721) by prevPage ( drawing 27 (c)). Moreover, when a title is chosen, the title information chosen by selectedTitle to application is notified ( drawing 27 (2731) (d)).

[0158] With a menuThread function, a thread is started (2741) and the event from a Cursor instance is received (2742). If the event from a Cursor instance is received, it confirms whether an event is title selection (2743), and when it is title selection, a selectdTitle function will be called (2744) and a selection title will be notified to application.

[0159] At step 2743, when it is not title selection, it confirms whether next there was any page migration (2745), and when it is truth, page migration judges the last page to degree page (2746), and performs starting (2747) of nextPage, and starting (2748) of prevPage to it, respectively ( drawing 27 (e)).

[0160] A "Audio class" and a "Subtitle class"

An Audio class is a class which has attribute value for every audio stream. It is in a title, for example, if there are two usable audio streams, two instances of an Audio class will be generated. A setup of the audio stream to reproduce is performed by setting either one instance as the setAudio function of a Title class.

[0161] Drawing 28 shows processing of an Audio class. Constructor Audio() reads stream attribute information file stream.xml (2801), and secures attribute value in an instance ( drawing 28 (2802) (a)).

[0162] Moreover, an Audio class returns to application, respectively, the channel information which an instance has by getChs, i.e., number of channels of a stream, (2821), the language information which an instance has by member function getLang ( drawing 28 (b)), i.e., the language with which a stream corresponds, and the condensed information which an instance has by getCoding ( drawing 28 (c)), i.e., the compression method of a stream, (2811).

[0163] A Subtitle class also has the same function as a Title class.

[0164] A "Event class" and a "Link class"

An Event class is a class which performs event generation within a title, and a Link class is a class which generates the event for the link informations between titles within a title.

[0165] Drawing 29 shows processing of an Event class and a Link class. The constructor of an Event class sets up an Event attribute based on an argument ( drawing 29 (2901) (a)).

[0166] Member function execEvent of an Event class is a function [ over-write / function / with application ] ( drawing 29 (b)). That is, starting of execEvent starts an event handler (2911). It is possible for execEvent to have ID (id) in an argument, and for application to identify which event trigger

(TRIGGER) was applied, and to branch and to perform future processings by this ID.

[0167] The constructor of a Link class generates the instance of Title given by the argument ( drawing 29 (c)).

[0168] notifyLink which is the member function of a Link class is a function [ over-write / as well as execEvent / function / application ], and performs delivery and event processing for a Title instance to application using this function ( drawing 29 (d)).

[0169] A "Cursor class" Cursor class is a class which processes the cursor on a screen. It explains using drawing 34 .

[0170] The constructor of a Cursor class generates / initializes positional information first (3401), starts the communication link with remote control (3402), and starts the thread CursorThread of cursor processing ( drawing 34 (3403) (a)).

[0171] In the cursor processing thread CursorThread, a lifting (3411) and a processing loop formation are first entered in a thread. By the processing loop formation, when it confirms whether migration of cursor broke out (3412) and migration breaks out, a call (3413) and positional information are updated for a moved function. When there is no migration, or when it detects whether selection activation was performed or in other words the user performed selection activation to the carbon button which cursor has chosen (3414) and selection activation is performed after step 3413, a selected function is notified to a call (3415) and the present Title ( drawing 34 (b)).

[0172] With a moved function, based on the specified argument, positional information is corrected ( drawing 34 (3421) (c)), and it notifies to a Title instance that there was a selection activation demand with a selected function ( drawing 34 (3431) (d)).

[0173] A "Status class" Status class is a class expressing the status of picture reproducer. This class does not exist in a meaning to picture reproducer or a system, and instantiation is not carried out each time. From application, access is performed as it is as a class.

[0174] As for access, getPeriod to which application gets to know getStatus which gets to know the status, and a shelf-life is prepared.

[0175] As shown in drawing 35 , a Status class generates Status information and Period information inside based on the value specified with a parameter ( drawing 35 (3501) (a)). Member function getStatus returns Status information to application (3511) ( drawing 35 (b)), and member function getPeriod returns Period information to application ( drawing 35 (c)). (3521)

[0176] A "Frame class" and a "Canvas class"

It is the class which carries out a screen configuration. A Frame class is a class which becomes the origin of a screen display, for example, is Windows (trademark). It is equivalent to the window seen by OS. The Canvas instance which performs animation playback is placed into a Frame instance.

[0177] A Canvas class is explained using drawing 36 . A Canvas class generates the Frame instance which carries out the screen overlay of the image data in a constructor (3601). Then, initialization (3603) of initialization (3602) of a decoder and overlay, i.e., a graphic function, is performed ( drawing 36 (a)). Initialization processing of a decoder and initialization processing of a graphic function are a low-ranking operating system (OS) and processing depending on hardware, and since it is essentially unrelated, detailed explanation is abbreviated to this invention.

[0178] Although the window which draws on a screen is displayed by the Canvas instance, actual image drawing is performed by the member function add. Function add performs read-out (3611) of the stream information in which is called as an argument and a Title instance has a Title instance, and a setup (3612) of a decoder. Then, a decoder is made to start decoding (3613) and overlay is made to start drawing of a decoding image ( drawing 36 (b)). (3614)

[0179] Moreover, a Canvas class has member function setSize and can change the size of Canvas with this function. As internal processing, the display size overlaid with size change (3621) of a Frame instance is changed, respectively ( drawing 36 (c)). (3622)

[0180] (Player regeneration) Next, the regeneration as player application is explained. Drawing 30 is the flow of player regeneration. After starting (3001), player application generates a Canvas instance as follows, and generates a video presentation window (3002). The interior action of Canvas instance

generation is as drawing 36 having explained. Canvas objCanvas = new Canvas();

[0181] The above-mentioned description is due to Java (trademark) language. Left end Canvas is class declaration and continuing objCanvas has declared that it is the object (instance) of a Canvas class. Moreover, new As for Canvas(), objCanvas is generated by a call and this in the constructor of a Canvas class.

[0182] Next, generation (3004) of a Package instance and acquisition (3005) of a menu instance are performed for the package selection from a user as follows after waiting (3003) and package selection, and a menu is displayed (3006). Moreover, generation of a package instance is as drawing 25 having explained.

Package objPackage = new Package(package); Menu objMenu = objPackage.getMenu(); objCanvas.add(objMenu);

[0183] The menu consists of a background image and a title information display (text), as shown in drawing 31. Selection (3007) of a title moves cursor with remote control, and is carried out by "choosing" on the target title.

[0184] Cursor moves by the remote control key (four directions). Migration of cursor and selection activation are detected and processed with the CursorThread function started as a thread, as drawing 34 explained.

[0185] For example, when migration of degree page is chosen, the selected function of a Cursor instance is called and it gets to know that the Menu instance had a page migration demand. Next, a Menu instance calls a nextPage function and sends a menu to degree page.

[0186] Moreover, when cursor "is chosen" on a title 4, a Menu instance acquires that the title was chosen through (selected) of a Cursor instance. Subsequently, a selectedTitle function notifies having been chosen in the title to application, and application shifts to the step (3008 or subsequent ones) of title playback.

[0187] Player application calls the getTitle function of a Package instance for the selected title information at an argument, and acquires a Title instance (3008). Subsequently, player application calls the play function of the acquired Title instance, starts title playback (3009), calls an enableEvent function, and starts the thread for events (3010).

Title objTitle = objPackage.getTitle(title); objTitle.play(); objTitle.enableEvent();

[0188] Henceforth, the check (3011) of event generating, the event processing (3012) at the time of event generating, and the check (3013) of title playback termination are repeated till title playback termination. If title playback termination is checked, processing with player application will be ended (3014).

[0189] Moreover, the event processing of step 3012 is as drawing 33 having explained. The title jump processing under title playback is explained using drawing 32. In the title 1, the branching registration period to a title 2 is established so that it may illustrate. The branching registration period is defined by the BRANCH tag and attribute value within the TIMELINE information in information file title1.xml of a title 1.

[0190] As shown during this branching registration period and under drawing 32, a message is displayed, and if a user presses "selection" key, it will change to the title 2 of a link place.

[0191] If it enters at a branching registration period (section specified by out from the attribute value in of branching information (<BRANCH>)) (drawing 33, 3302) Status of the branching (BRANCH) processing concerned is compared with Status (it acquires by Status.getStatus()) which picture reproducer has (passage of the table mentioned above). judge whether it can process (drawing 33, 3303) and pass the check (drawing 33, 3304) of being BRANCH -- the waiting loop formation for a request (drawing 33, 3305 and 3306) is entered from a user.

[0192] The selection activation request from a user is received through a Cursor instance (drawing 34, 3414-3415). When there is a selection activation request from a user, a new Title instance is generated and playback of the following title (drawing 32 title 2) is started (drawing 34, 3307). Moreover, when there is no selection activation request from a user by the branching registration period (out), branching (BRANCH) processing is ended through detection of a time-out (drawing 33, 3306).



[0193] Drawing 37 is the example of game application. In this example, game application is started instead of player application (3701). Like player application, a Canvas instance is generated and a video presentation window is generated (3702). The interior action of Canvas instance generation is as drawing 36 having explained. Canvas objCanvas = new Canvas();

[0194] Game application starts a game (3703) and performs the acquisition (3704) of a Package instance and the acquisition (3705) of a Title instance which game application uses. The play function of the acquired Title instance is called, title playback is started (3706), an enableEvent function is called, and the thread for events is started (3707).

Package objPackage = new Package(package); Title objTitle = objPackage.getTitle(title); objTitle.play(); objTitle.enableEvent();

[0195] Henceforth, the check (3708) of event generating, the event processing (3709) at the time of event generating, and the check (3710) of title playback termination are repeated till game termination. If game termination is checked, processing of game application will be ended (3711).

[0196] In the case of game application, a game and AV playback can be synchronized using an event trigger. For example, the following event triggers (<TRIGGER>) are put into the time-line information (<TIMELINE>) within the title information (<TITLE>) explained by drawing 18.

<TRIGGER level="full" id="1" event="1" time="00:01:00:00"/> [0197] If time of day 00:01:00:00 (one part) comes, it will recognize that the event thread became object time of day (time) ( drawing 33 , 3302), and Event generation ( drawing 33 , 3313) and execEvent starting ( drawing 33 , 3314) will be performed through a status (Status) check ( drawing 33 , 3303), a branching (Branch) check ( drawing 33 , 3304), and a message (Message) check ( drawing 33 , 3308).

[0198] Are over-write member function execEvent started with game application, and game application can perform synchronous processing by the side of a game based on id obtained from execEvent.

[0199] Drawing 38 and drawing 39 are drawings explaining the example which updates Status or Expire information from a server through a network, in order to cancel the playback limit by the status (Status) or the expiration date (Expire) between a package and picture reproducer.

[0200] The status (Status) and time information which picture reproducer has are compared with the regeneration level (level) and expiration date (expire) which a package has, respectively, and it attests whether a package is reproducible as drawing 25 explained ( drawing 25 , 2502). If refreshable, the step after 2504 will be processed, and if playback is impossible, regeneration will be terminated by step 2503.

[0201] Instead of regeneration termination (2503) of drawing 25 , processing which updates the status (Status) of picture reproducer or the expiration date (expire) of a package may be performed.

[0202] Since the status (Status) of picture reproducer did not suit the level (level) of drawing 39 of a package, when playback is not completed, it is an example which communicates with a server and updates the status (Status) of picture reproducer. Instead of termination (2503) of drawing 25 , renewal (2503) of the status (Status) is performed by drawing 39 ( drawing 39 (a)). As shown in (b) of drawing 39 , update application is started first (250301). This update application may be the application of the binary code base which one application built on middleware like player application or game application is sufficient as, or is directly started on an operating system. For example, when it is the application on middleware, player application can start update application through a Loader class.

[0203] Update application communicates with a server using the Socket class and direct network protocols (TCP/IP etc.) which are offered by middleware (Java (trademark)) (250302). The server which communicates is <INTERNET of Package. It is directed by URL=""/>. Application communicates with a server, receives conditions (amount of money) required in order to carry out renewal of the status (Status) (250303), and shows them to a user (250304).

[0204] When, as for application, waiting (250305) and a user desire renewal of the status (Status) for the response from a user (250306), accounting (250307) with a server is performed, a status (Status) update process (250308) is performed, application is ended (250309), and, as for player application, processing from step 2501 of drawing 25 is performed again.

[0205] An input, a communication link, etc. of a credit card number perform the above-mentioned

accounting. Since there are various techniques in the accounting system on the Internet and it is essentially [ this invention ] unrelated, detailed explanation is omitted.

[0206] At step 250306, when a user does not desire renewal of the status (Status), it ends as it is (250310).

[0207] Here, although explained to the example, the renewal of an expiration date (expire) can perform renewal of the status (Status) similarly. However, in this case, status (Status) information on picture reproducer is not updated, but the term (expire) information on a package is updated. When the package is recorded by ReWritable media, it is possible to update direct information. On the other hand, in the case of the media only for reading, it is forming the system which records term (expire) information on momentary record media, such as nonvolatile memory with which picture reproducer's was equipped, or a hard disk, temporarily, and it can reuse update information.

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[Translation done.]

**\* NOTICES \***

**JPO and NCIPi are not responsible for any damages caused by the use of this translation.**

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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**DESCRIPTION OF DRAWINGS**

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**[Brief Description of the Drawings]**

- [Drawing 1] It is the conceptual diagram showing package business.
- [Drawing 2] (a) - (c) is the conceptual diagram showing worth of contents.
- [Drawing 3] It is the conceptual diagram showing the time shift business in a movie.
- [Drawing 4] It is the block diagram of DVD specification.
- [Drawing 5] It is the block diagram of a domestic AV equipment.
- [Drawing 6] It is the conceptual diagram of the link between movie titles.
- [Drawing 7] It is the conceptual diagram showing new value.
- [Drawing 8] It is the conceptual diagram showing the level of E package.
- [Drawing 9] (a) - (d) is the block diagram of various specification.
- [Drawing 10] It is a player model block diagram on middleware.
- [Drawing 11] It is the conceptual diagram of the example "a player" of application.
- [Drawing 12] It is the conceptual diagram of the example "a game" of application.
- [Drawing 13] It is the conceptual diagram of the example "the link between movies" of application.
- [Drawing 14] It is the block diagram of E package specification.
- [Drawing 15] They are a directory and the block diagram of a file.
- [Drawing 16] It is a data structure diagram "package information."
- [Drawing 17] It is a data structure diagram "menu information."
- [Drawing 18] It is a data structure diagram "title information."
- [Drawing 19] It is a data structure diagram "stream information."
- [Drawing 20] It is a data structure diagram "a title stream."
- [Drawing 21] It is stream structural drawing.
- [Drawing 22] It is a picture reproducer block diagram.
- [Drawing 23] It is a software configuration Fig.
- [Drawing 24] It is drawing showing a class list.
- [Drawing 25] (a) - (c) is the processing flow of a Package class.
- [Drawing 26] (a) - (d) is the processing flow of a Title class.
- [Drawing 27] (a) - (e) is the processing flow of a Menu class.
- [Drawing 28] (a) - (c) is the processing flow of an Audio class.
- [Drawing 29] (a) - (d) is the processing flow of an Event class and a Link class.
- [Drawing 30] It is a player playback flow.
- [Drawing 31] It is drawing of the example of a menu.
- [Drawing 32] It is drawing of the example of operation under title playback.
- [Drawing 33] It is the processing flow of an enableEvent function.
- [Drawing 34] (a) - (d) is the processing flow of a Cursor class.
- [Drawing 35] (a) - (c) is the processing flow of a Status class.
- [Drawing 36] (a) - (c) is the processing flow of a Canvas class.
- [Drawing 37] It is a game application playback flow.

[Drawing 38] It is the conceptual diagram of renewal of the status.

[Drawing 39] (a) is the partial diagrammatic view of (a) of drawing 25 , and (b) is an update application process flow.

[Description of Notations]

201 File System Driver

202 Device Driver

203 Operating System

204 Middleware

205 E Package Class

206 Player Application

207 External Application

2501 Package.XML Reading Step

2502 Authentication Step

2503 Update Check Step

2504 Menu Instance Generation Step

2505 Title Instance Generation Step

2511 Menu Instance Return Step

2521 Title Instance Return Step

2601 Title.XML Reading Step

2602 Link List Generation and Link Point Detection Step

2603 Chapter List Generation Step

2604 Stream.Xml Reading Step

2605 Audio and Subtitle Instance Generation Step

2606 Timeline List Generation Step

2607 Function List Generation Step

2608 Curosr Generation Step

2611 Effective Check Step

2612 Playback Initiation Step

2621 Audio Instance Return Step

2631 Audio Stream Setting Step

2641 Thread Starting Step

2642 Object Time-of-Day Check Step

2701 Menu.Xml Reading Step

2702 Title Instance Generation Step

2703 Page Instance Generation Step

2704 Head Page Display Step

2705 MenuThread Starting Step

2711 Page [ Degree ] Display Step

2721 The Last Page Display Step

2731 Notice Step of Title

2741 Thread Starting Step

2742 Notice Reception Step of Cursor

2743 Title Selection Step

2744 SelecteTitle Starting Step

2745 Page Migration Check Step

2746 Page [ Degree ] Migration Check Step

2747 NextPage Starting Step

2748 PrevPage Starting Step

2801 Stream.Xml Reading Step

2802 Attribute Value Record Step

2811 Language Information Return Step

2821 Condensed-Information Return Step  
2901 Event Attribute Setting Step  
2911 Event Processing Step  
2921 Title Instance Generation Step  
2931 Event Processing Step  
3001 Player Starting Step  
3002 Image Generation Step  
3003 Package Selection Step  
3004 Package Generation Step  
3005 Menu Acquisition Step  
3006 Menu Display Step  
3007 Title Selection Step  
3008 Title Acquisition Step  
3009 Title Playback Initiation Step  
3010 Event Thread Starting Step  
3011 Event Reception Step  
3012 Event Processing Step  
3013 Title Termination Check Step  
3014 Player Termination Step  
3301 Thread Starting Step  
3302 Time-of-Day Check Step  
3303 Status Check Step  
3304 Branching Check Step  
3305 User Demand Check Step  
3306 Time-out Check Step  
3307 Title Generation Step  
3308 Message Check Step  
3309 Text Generation Step  
3310 Text Display Step  
3311 Time-out Check Step  
3312 Text Elimination Step  
3313 Event Generation Step  
3314 ExecEvent Starting Step  
3401 Positional Information Generation Step  
3402 Communication Link Initiation Step  
3403 CurosrThread Starting Step  
3411 Thread Starting Step  
3412 Migration Check Step  
3413 Moved Starting Step  
3414 Selection Activation Check Step  
3415 Selected Starting Step  
3421 Renewal Step of Positional Information  
3431 Notice Step of Title  
3501 Status, Period Information Generation Step  
3511 Status Information Response Step  
3521 Period Information Response Step  
3601 Frame Generation Step  
3602 Decoder Initialization Step  
3603 Overlay Initialization Step  
3611 Stream Information Read-out Step  
3612 Decoder Setting Step

3613 Decoding Initiation Step  
3614 Drawing Initiation Step  
3621 Renewal Step of Frame Size  
3622 Renewal Step of Display Size  
3701 Game Starting Step  
3702 Screen Generation Step  
3703 Game Initiation Step  
3704 Package Acquisition Step  
3705 Title Acquisition Step  
3706 Title Playback Initiation Step  
3707 Event Thread Starting Step  
3708 Event Reception Step  
3709 Event Processing Step  
3710 Game Termination Step  
3711 Game Termination Step  
250301 Updating application starting step  
250302 Server communication link initiation step  
250303 Renewal condition acquisition step of the status  
250304 Renewal condition presentation step of the status  
250305 Waiting step for a user input  
250306 Renewal check step of the status  
250307 Accounting step  
250308 Renewal step of the status  
250309 Application termination step  
250310 Application termination step

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[Translation done.]

## \* NOTICES \*

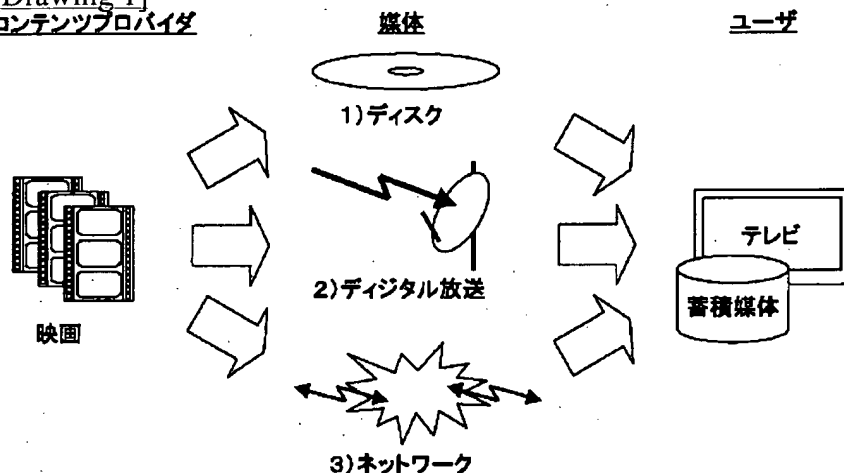
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2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DRAWINGS

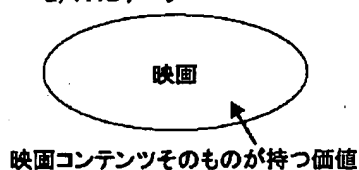
[Drawing 1]

コンテンツプロバイダ

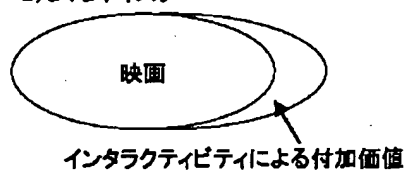


[Drawing 2]

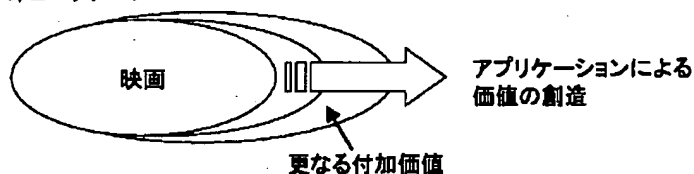
a) VHSテープ



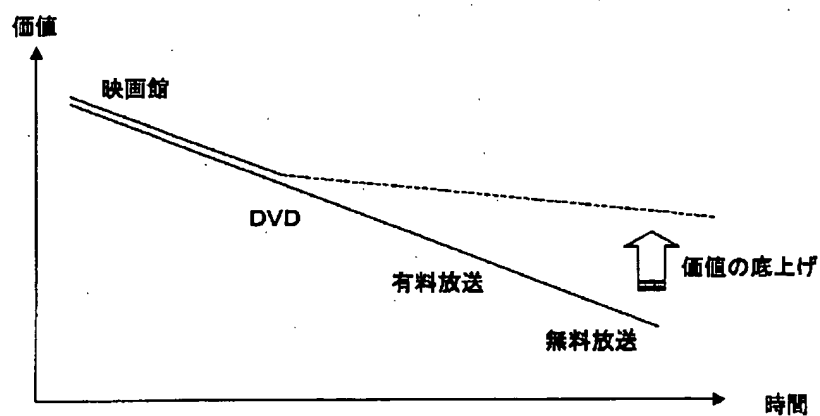
b) DVDディスク



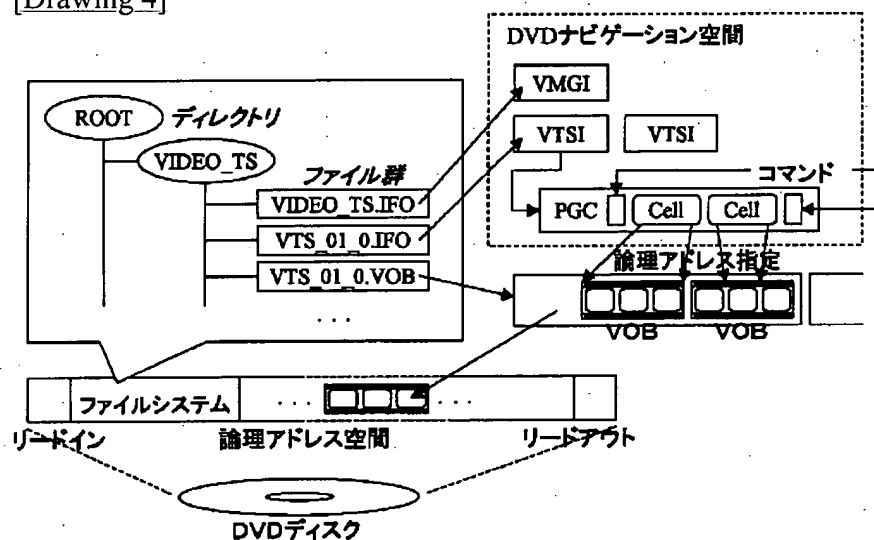
c) Eパッケージ



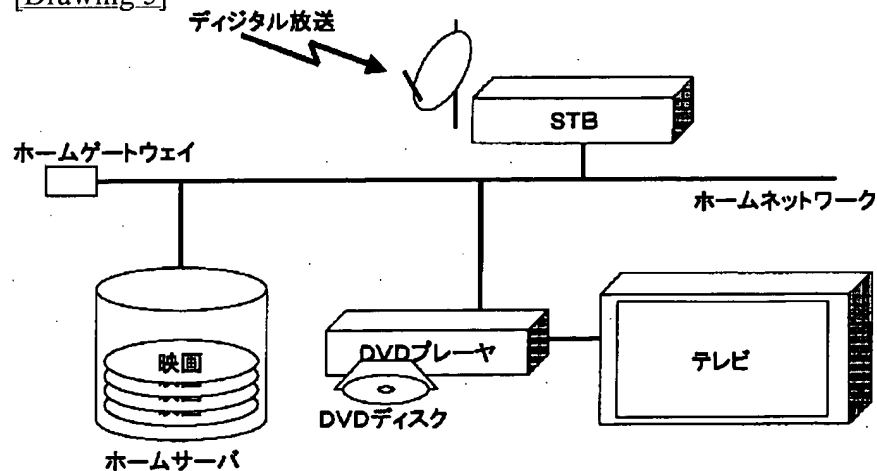
[Drawing 3]



[Drawing 4]

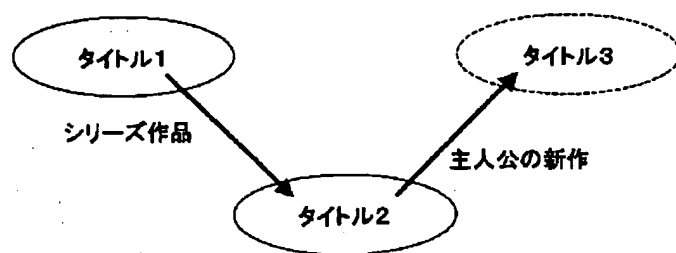


[Drawing 5]

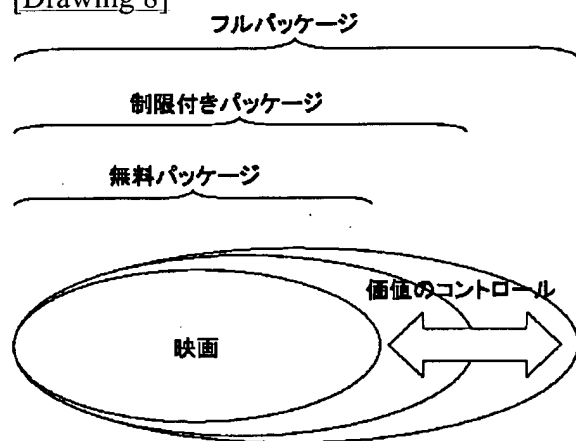


[Drawing 6]

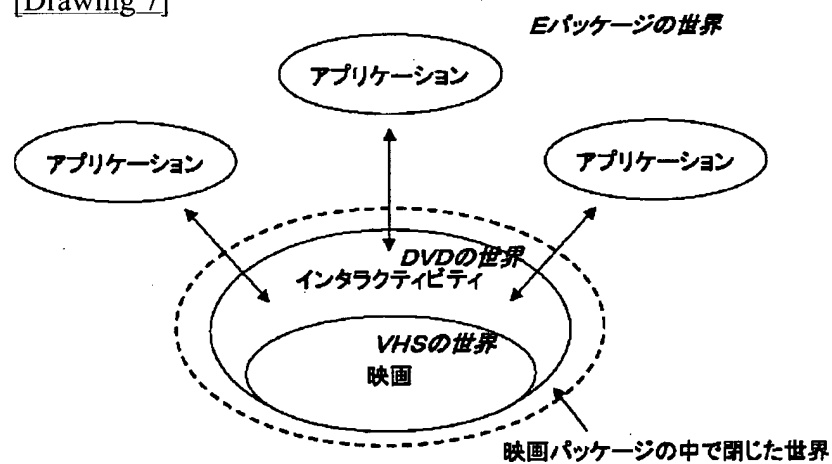




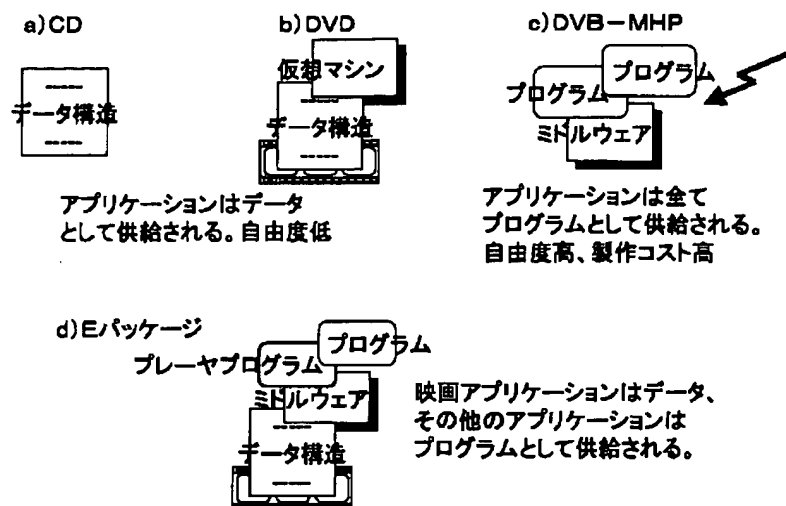
[Drawing 8]



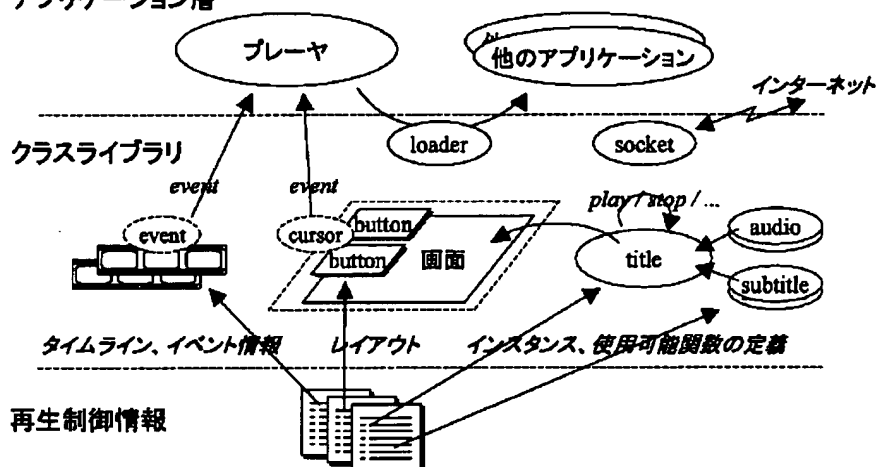
[Drawing 7]



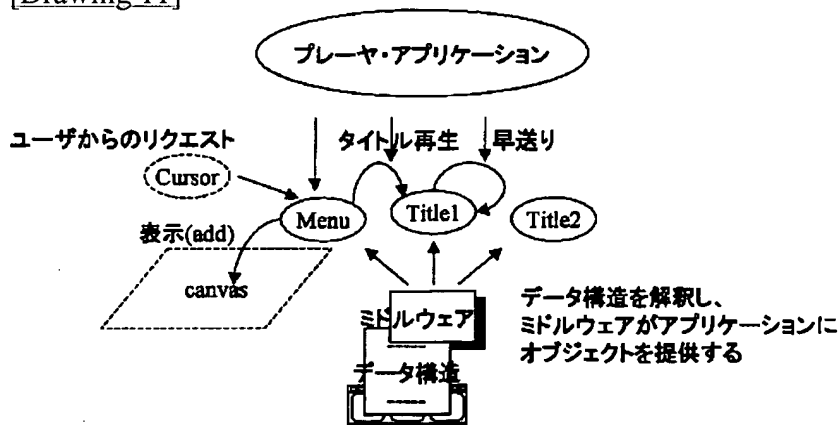
[Drawing 9]



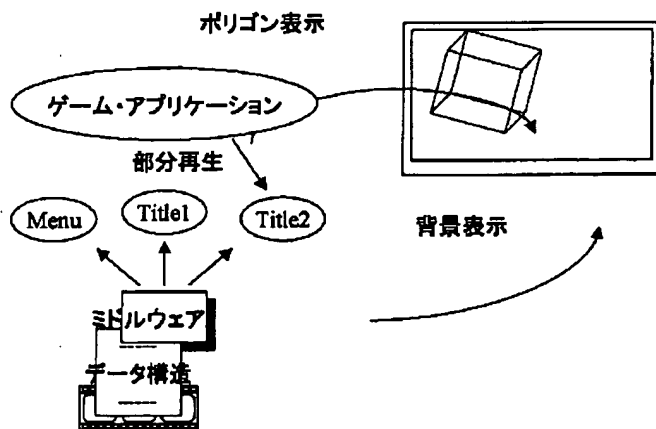
[Drawing 10]  
アプリケーション層



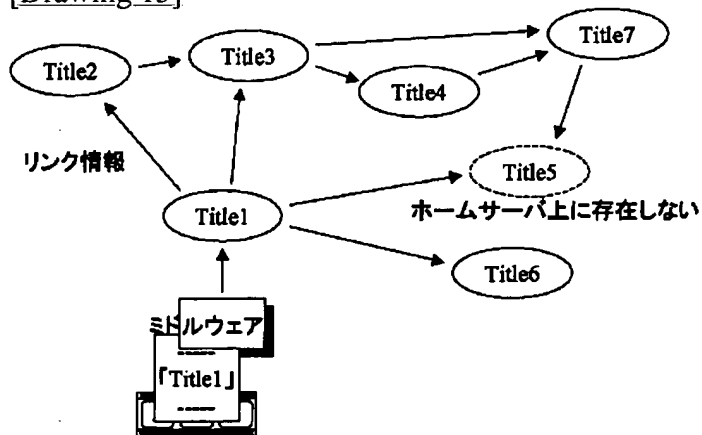
[Drawing 11]



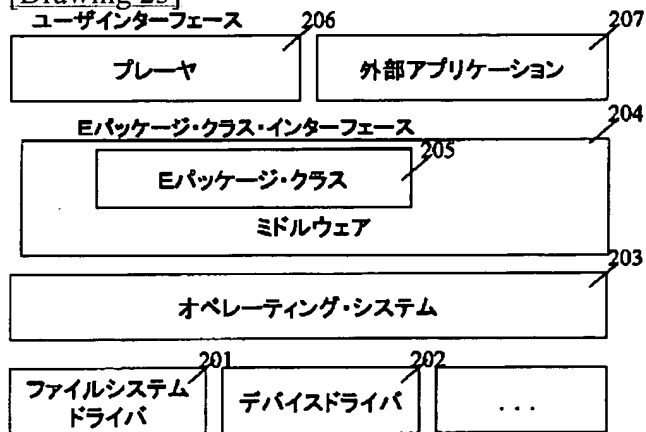
[Drawing 12]



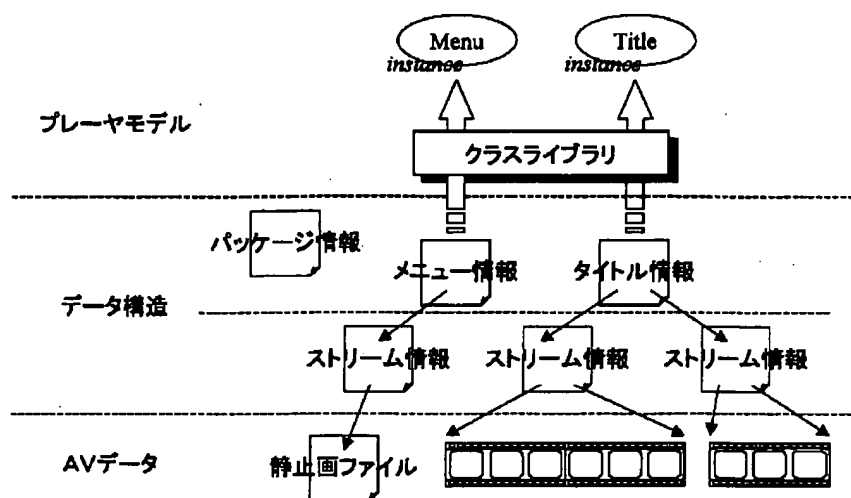
[Drawing 13]



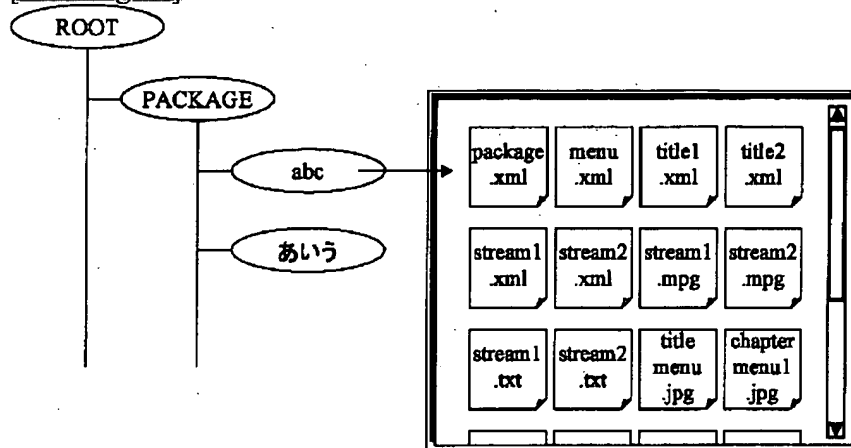
[Drawing 23]



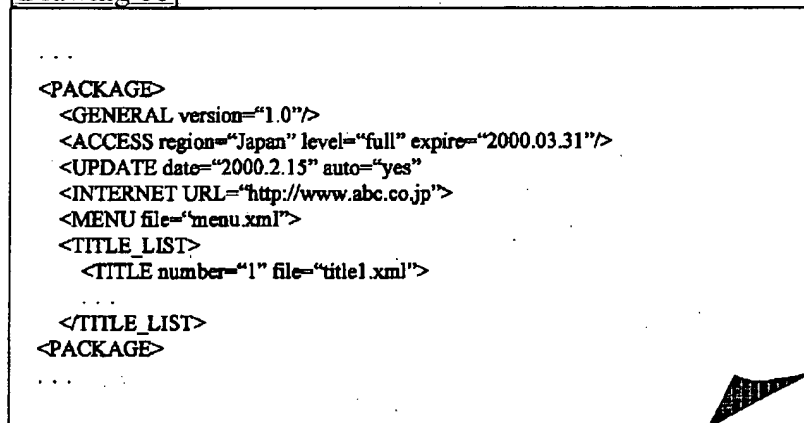
[Drawing 14]



[Drawing 15]



[Drawing 16]



[Drawing 17]

```

...
<MENU>
  <MENU_PAGE page="1" image="titlmenu.jpg">
    <TITLE column="1" row="1" title="1" object="button">劇場公開版</TITLE>
    <TITLE column="1" row="2" title="2" object="button">ディレクターズカット版
  </TITLE>
</MENU_PAGE>
</MENU>
...

```

## [Drawing 18]

```

...
<TITLE titleno="1" level="full">
  <LINK_LIST>
    <LINK ID="1" package="abc" title="1" chapter="1" time="00:00:00:00"/>
  </LINK_LIST>
  <CHAPTER_LIST>
    <CHAPTER in="00:00:00:00" out="00:24:15:30"
      video="stream1.mpg" subtitle="stream1.txt">
      <TIMELINE>
        <BRANCH level="full" message="過去の名作" id="1" in="00:01:00:00"
          out="00:11:00:00" jump="title2" />
      </TIMELINE>
    </CHAPTER>
  </CHAPTER_LIST>
  <INTERFACE>
    <PLAY level="free">
    <SETRATE level="full">
  </INTERFACE>
</TITLE>

```

## [Drawing 19]

```

...
<STREAM file="stream1.mpg">
  <ATTRIBUTE>
    <VIDEO coding="MPEG2" resolution="720x480" aspect="16:9"/>
    <AUDIO coding="AC-3" bitrate="256kbps" channel="5.1" language="English"/>
    <AUDIO coding="MPEG" bitrate="224kbps" channel="2" language="Japanese"/>
  </ATTRIBUTE>
  <TIMEMAP>
    <ENTRY duration="00:00:00:12" size="152000"/>
    <ENTRY duration="00:00:00:15" size="213000"/>
  </TIMEMAP>
</STREAM>
...

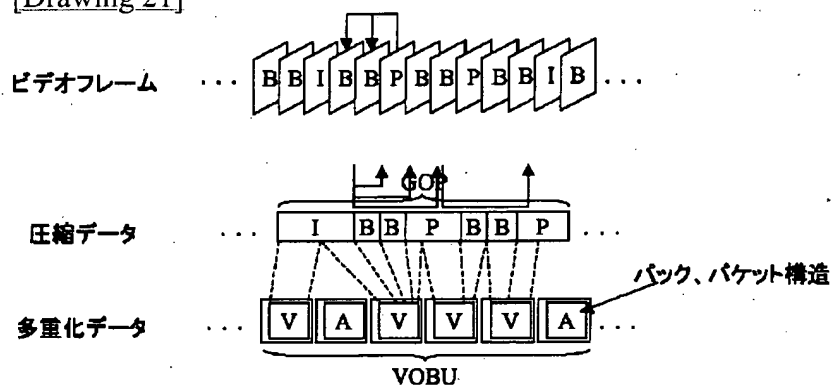
```

## [Drawing 20]

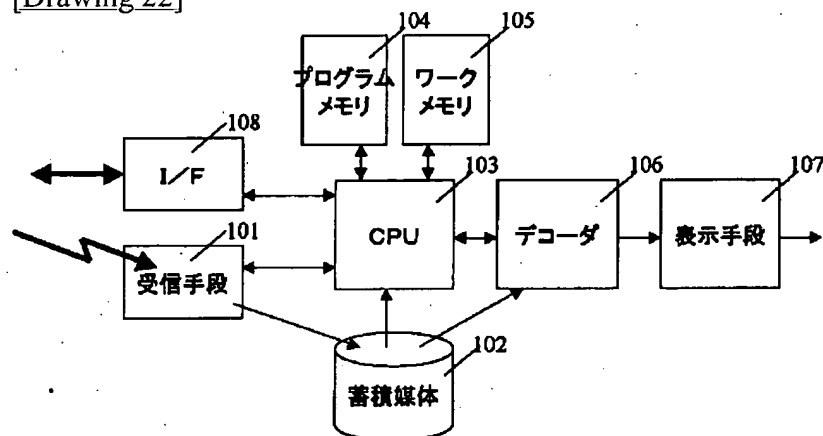
```

...
<SUBTITLE>
  <LANGUAGE language="Japanese" character="Shift-JIS" font="Gothic"
    color="white" italic="off" bold="off" underline="off">
    <TEXT in="00:00:05:32" out="00:00:05:42">元気だったか？</TEXT>
    <TEXT in="00:00:05:45" out="00:00:05:50" italic="on">ああ、</TEXT>
    <TEXT in="00:00:06:02" out="00:00:06:12" color="blue">なにかあったのか？
    </TEXT>
    <TEXT in="00:00:06:17" out="00:00:06:25">じつは... </TEXT>
    ...
  </LANGUAGE>
  ...
</SUBTITLE>
...
```

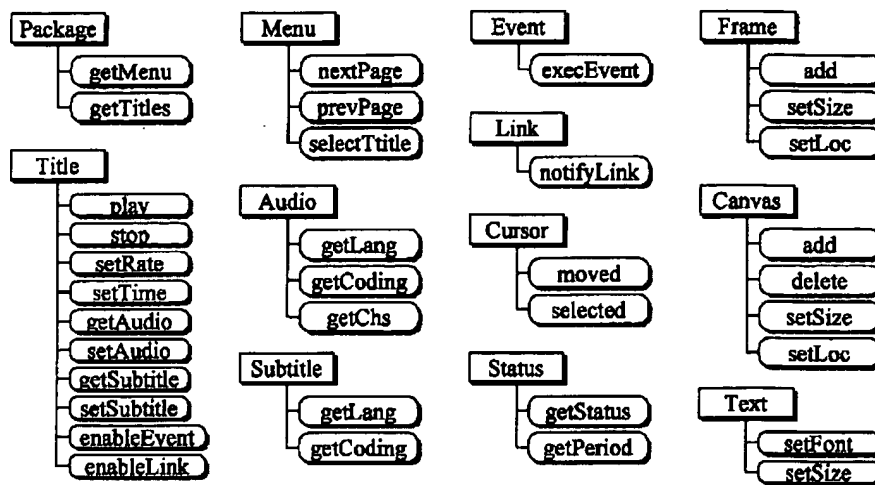
[Drawing 21]



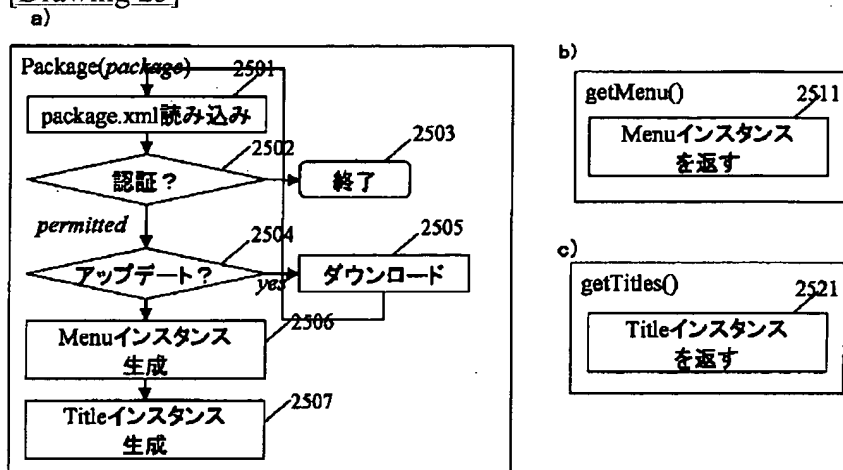
[Drawing 22]



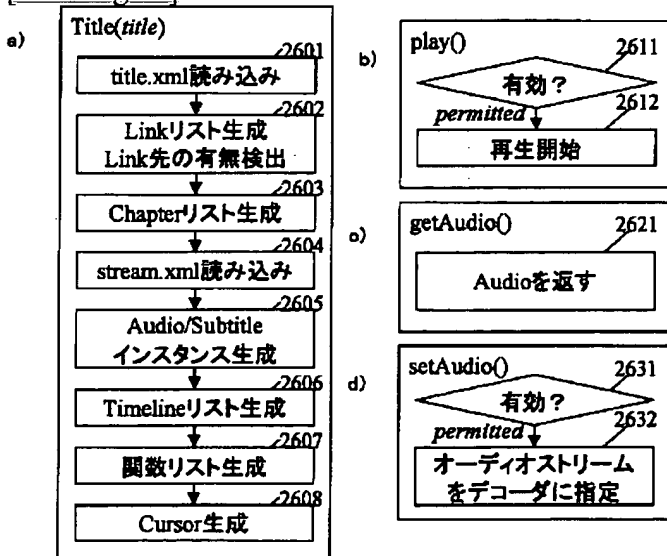
[Drawing 24]



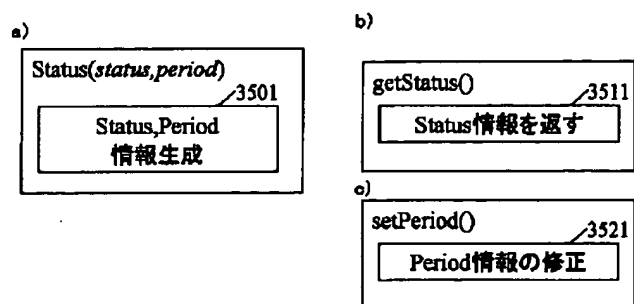
[Drawing 25]



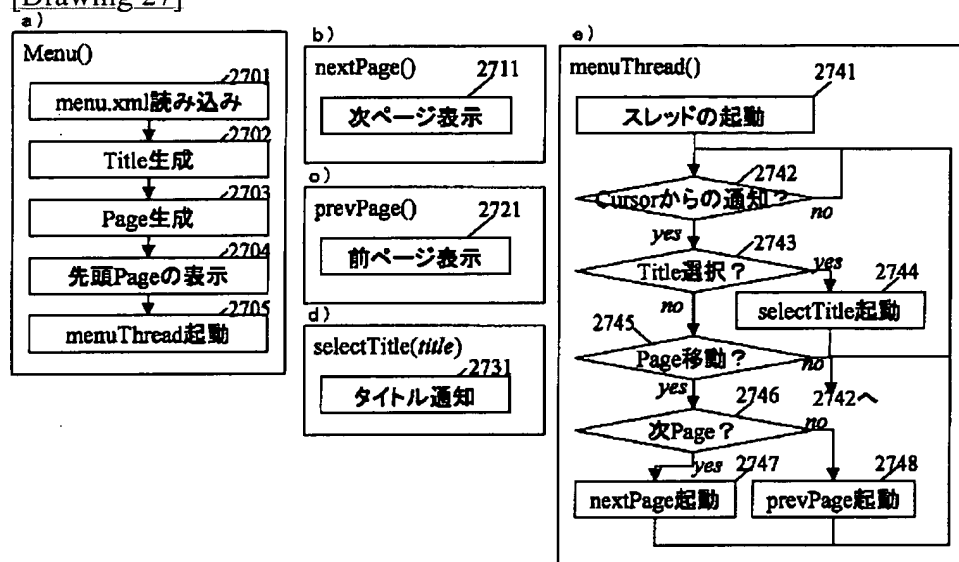
[Drawing 26]



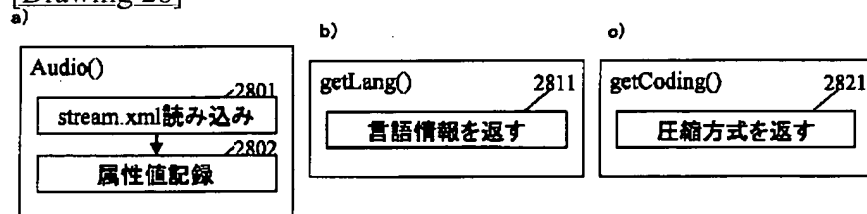
[Drawing 35]



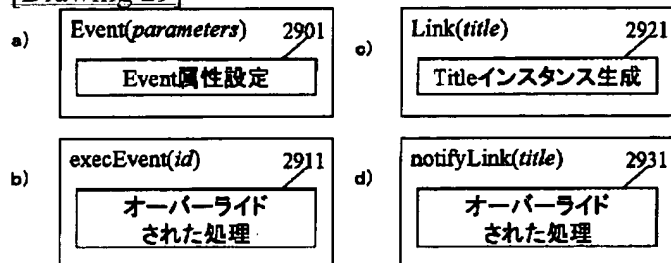
[Drawing 27]



[Drawing 28]

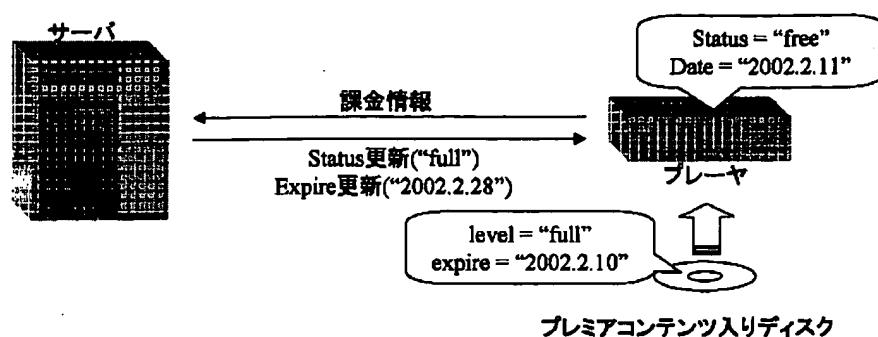


[Drawing 29]

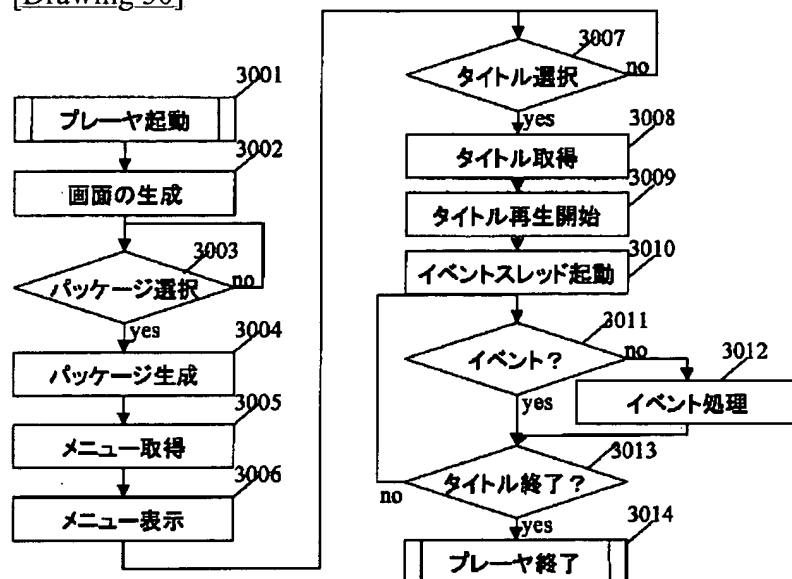


[Drawing 38]

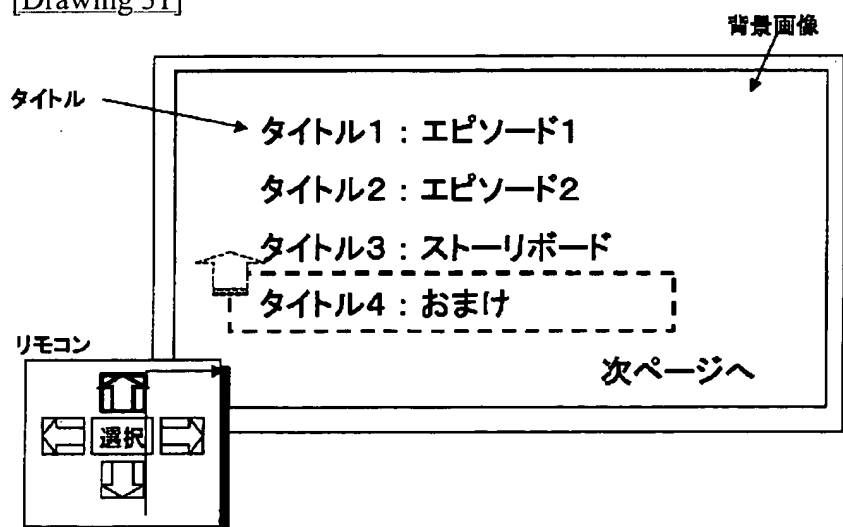




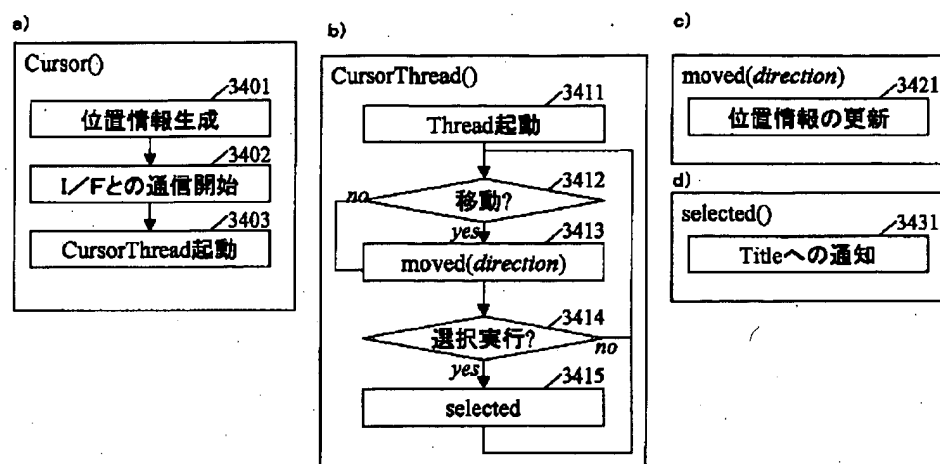
[Drawing 30]



[Drawing 31]

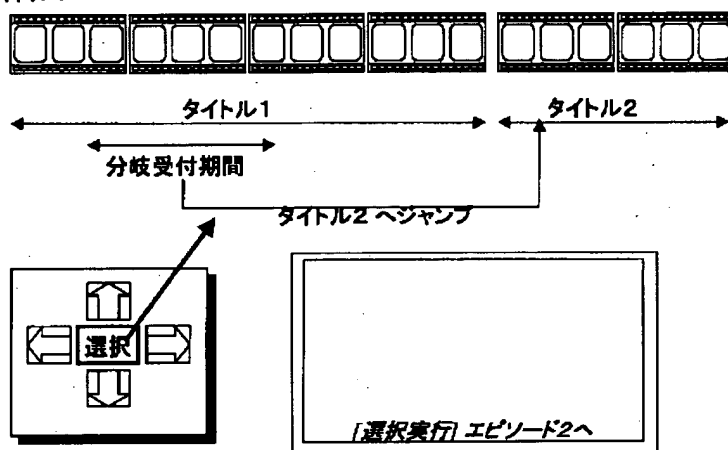


[Drawing 34]

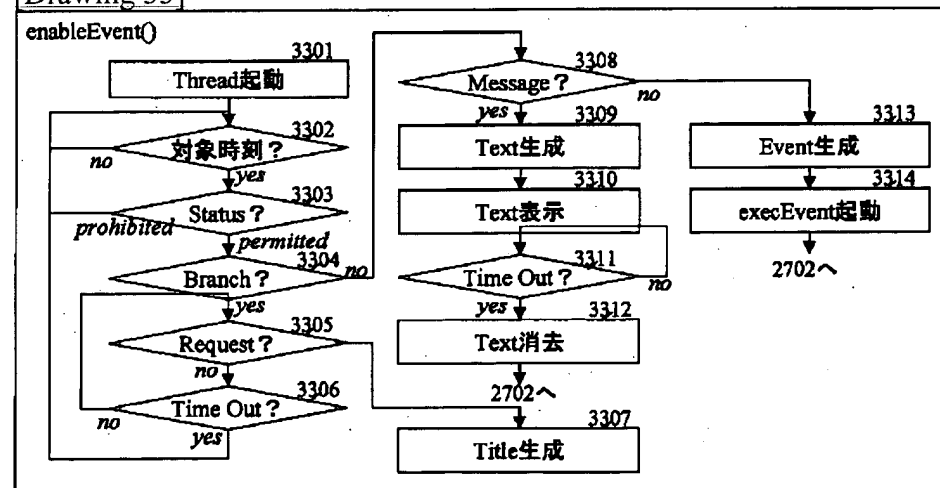


[Drawing 32]

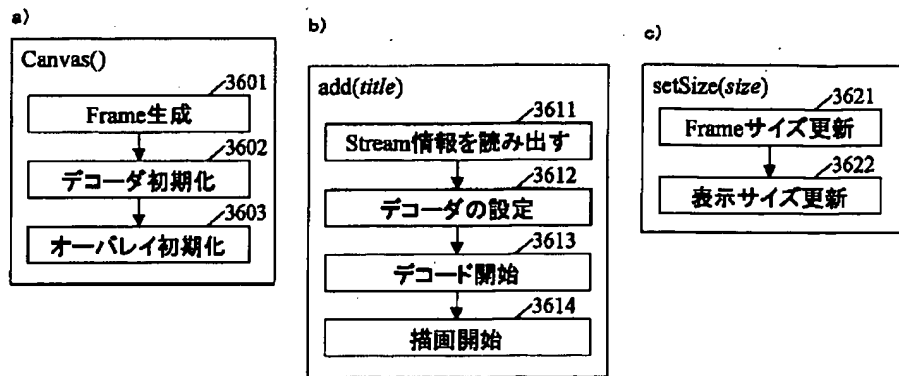
タイトル1



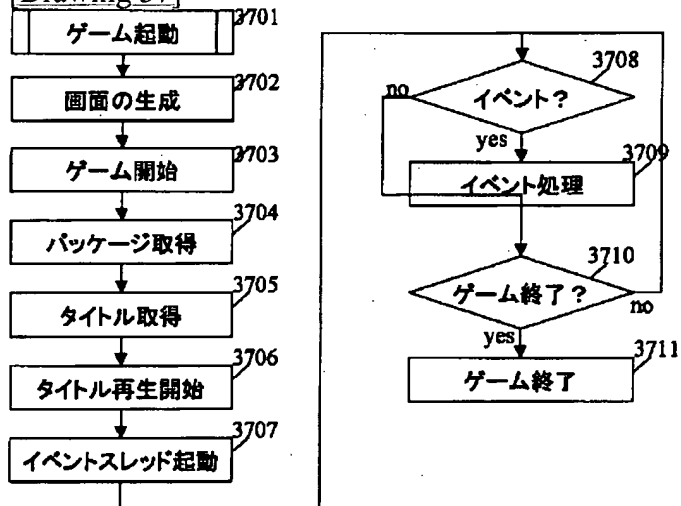
[Drawing 33]



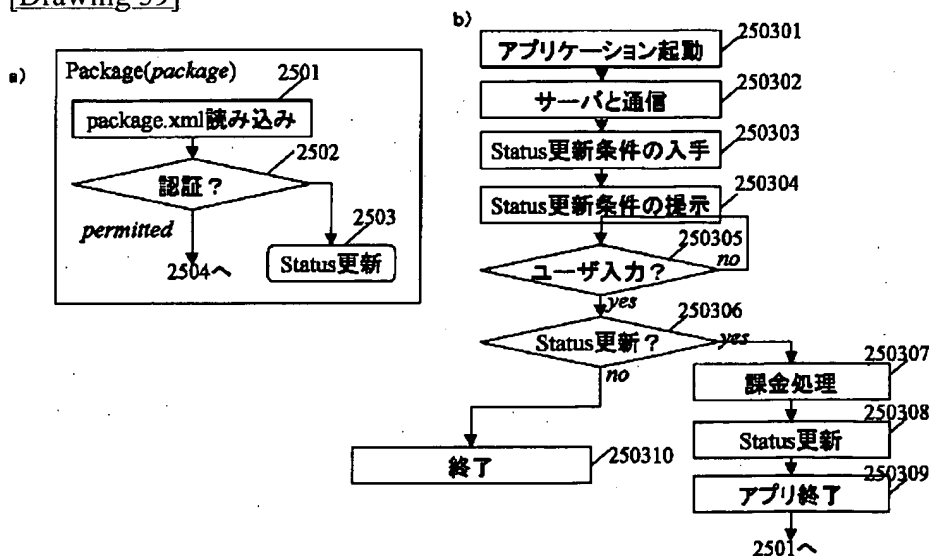
[Drawing 36]



[Drawing 37]



[Drawing 39]



[Translation done.]

## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2003-249057

(43)Date of publication of application : 05.09.2003

(51)Int.Cl. G11B 27/00  
G11B 20/10  
G11B 20/12  
H04N 5/91

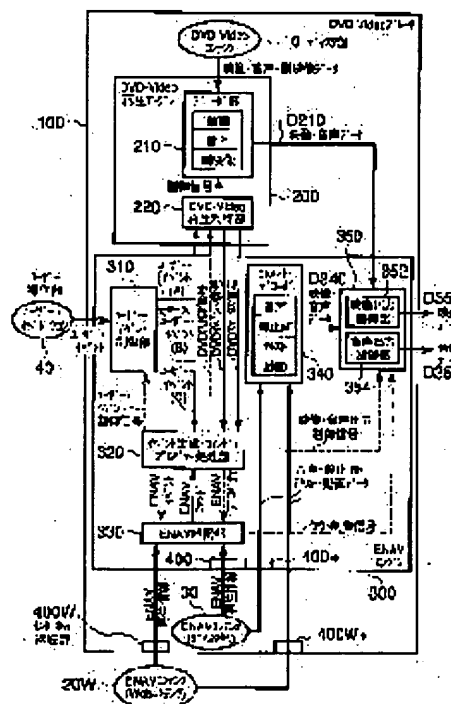
(21)Application number : **2002-049749** (71)Applicant : **TOSHIBA CORP**  
(22)Date of filing : **26.02.2002** (72)Inventor : **TSUMAGARI YASUSHI**  
**MIMURA HIDENORI**  
**TAKAHASHI HIDEKI**

**(54) ENHANCED NAVIGATION SYSTEM USING DIGITAL INFORMATION MEDIUM**

(57)Abstract:

**PROBLEM TO BE SOLVED:** To add a new navigation function to a conventional DVD video.

**SOLUTION:** A player part 100 reproduces recording contents including video contents 10 and ENAV (enhanced navigation) contents 30 associated with the contents (menu and chapter) of the video contents 10 from a DVD video disk. The video contents of the recording contents of the DVD disk are reproduced by a video reproducing engine 200. The ENAV contents 30 of the recording contents of the DVD disk are reproduced by an ENAV engine 300. The ENAV engine 300 is so constituted as to associate, interlock, or synchronize the reproduction of the ENAV contents and the reproduction of the video contents 10 according to the contents of the reproduced ENAV contents 30.



## LEGAL STATUS

[Date of request for examination]

26.02.2002

[Date of sending the examiner's decision of rejection] 26.10.2004

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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**CLAIMS**

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[Claim(s)]

[Claim 1] From a digital videodisc with the volume space based on DVD video specification Video contents, And it relates to the contents of playback of these video contents. Refreshable navigation contents The player section which reproduces the included record contents, and the video reconditioned engine which reproduces said video contents among the record contents of the; aforementioned digital videodisc; Said navigation contents are reproduced among the record contents of said digital videodisc. Equipment characterized by having the navigation engine constituted so that playback of said navigation contents and playback of said video contents might be made to cooperate according to the contents of these navigation contents.

[Claim 2] Equipment according to claim 1 characterized by being constituted so that said navigation engine may be interlocked with change of the recovery status of the video contents in the volume space based on said DVD video specification and the contents of said navigation contents may change.

[Claim 3] Equipment according to claim 1 or 2 characterized by being constituted so that the signal with which said navigation engine answers change of the recovery status of the video contents in the volume space based on said DVD video specification, and controls playback actuation of said video reconditioned engine may be taken out.

[Claim 4] The 1st interface which receives said navigation engine from a digital videodisc with the volume space based on said DVD video specification in said navigation contents, It has the 2nd interface which obtains another navigation contents from a communication line. The condition that said player section is loaded with said digital videodisc, and said 2nd interface is separated from said communication line is made into offline mode. The condition that said digital videodisc is discharged from said player section, and said 2nd interface is connected to said communication line is made into online mode. When the condition that said player section is loaded with said digital videodisc, and said 2nd interface is connected to said communication line is made into mixture mode Equipment given in any 1 term of claim 1 characterized by being constituted between said offline mode, online mode, and mixture mode so that mode transition may be performed automatically when the change-over trigger started thru/or claim 3.

[Claim 5] Said video reconditioned engine contains the video recovery control section which controls playback of the record contents from a digital videodisc with the volume space based on said DVD video specification. The; aforementioned navigation engine The output section which outputs the signal of the contents of said video contents reproduced from said digital videodisc under said video recovery control section which reaches in part at least and is equivalent to some of/or said navigation contents [ at least ]; from said digital videodisc The interpretation section which interprets the contents of said reproduced navigation contents; It is based on the contents interpreted in said interpretation section, or a user event from user actuation. While exchanging the 1st signal about the recovery status of said digital videodisc between said video recovery control sections It is constituted so that the 2nd signal about the contents of said navigation contents may be exchanged between said interpretation sections. Equipment given in any 1 term of claim 1 characterized by including the information processing section which

controls the signal output state by said output section based on either [ at least ] said 1st signal for which it was exchanged, or the 2nd signal thru/or claim 4.

[Claim 6] Equipment given in any 1 term of claim 1 characterized by having the 1st interface received from the digital videodisc in which said navigation engine has the volume space based on said DVD video specification in said navigation contents, and the 2nd interface which obtains said navigation contents and another navigation contents with contents of the same kind from the Internet thru/or claim 5.

[Claim 7] Said video reconditioned engine The 1st decoder which offers at least the image of the contents corresponding to the record contents reproduced from the digital videodisc with the volume space based on said DVD video specification and one side of voice data is included. The; aforementioned navigation engine The 2nd decoder which offers at least the image of the contents corresponding to said navigation contents, and one side of voice data; The image data offered from said 1st decoder and the image data offered from said 2nd decoder are compounded suitably. Or the image output-control section which chooses and outputs one image data; The voice data offered from said 1st decoder and the voice data offered from said 2nd decoder are compounded suitably. Or equipment given in any 1 term of claim 1 characterized by including the voice output control section which chooses and outputs one voice data thru/or claim 6.

[Claim 8] Said equipment has a video mode and an interactive mode about actuation, and has a full video mode, full navigation mode, and mixed mode about a display. Said video mode It is the mode which reproduces said video contents. Said interactive mode It is the mode which reproduces said video contents and/or said navigation contents. When said video reconditioned engine reproduces said video contents in said interactive mode When said full video mode is used for displaying the playback image and said navigation engine reproduces said navigation contents in said interactive mode Said full navigation mode is used for displaying the playback image. Or when said video reconditioned engine reproduces said video contents in said interactive mode and said navigation engine reproduces said navigation contents Said mixed mode is used for displaying the playback image of said video contents, and the playback image of said navigation contents. Equipment given in any 1 term of claim 1 characterized by consisting of said mixed modes so that the contents of an image of said video contents and the contents of an image of said navigation contents may be mixed and may be displayed thru/or claim 7.

[Claim 9] A digital videodisc with the volume space based on DVD video specification to video contents, The player section which reproduces the record contents which included the navigation contents containing the contents of the playback control information which consisted of a markup language, a script language, etc., and others; It is what is contained in said player section. The video reconditioned engine which reproduces the 1st image and voice data corresponding to said video contents among the record contents of said digital videodisc; It is what is contained in said player section. The place used for incorporating another navigation contents including another playback control information, A connection with a communication line; It is what is contained in said player section. The contents of said playback control information included in another navigation contents incorporated from said playback control information by which it is contained in said navigation contents of the record contents of said digital videodisc, or said communication line are embraced. In equipment equipped with the navigation engine which controls the playback output of said player section The language interpretation section as which said navigation engine interprets the contents of said playback control information included in said navigation contents, The information processing section which executes the command contained in said playback control information interpreted in said language interpretation section, The element decoder which generates the 2nd image and voice data corresponding to the contents of said others which are contained in said navigation contents, It is based on said playback information interpreted in said language interpretation section, and/or the activation result of said command in said information processing section. Said the 2nd image and voice data generated by said element decoder are compounded and outputted to said the 1st image and voice data reproduced by said video reconditioned engine. Or the digital video regenerative apparatus characterized by consisting of

the output sections which choose and output either said the 1st image and voice data, or said the 2nd image and voice data.

[Claim 10] A digital videodisc with the volume space based on DVD video specification to video contents, The player section which reproduces the record contents which included the navigation contents containing the contents of playback control information and others; It is what is contained in said player section. The video reconditioned engine which reproduces the 1st image and voice data corresponding to said video contents among the record contents of said digital videodisc; It is what is contained in said player section. The place used for incorporating another navigation contents including another playback control information, A connection with a communication line; It is what is contained in said player section. The contents of said playback control information included in another navigation contents incorporated from said playback control information by which it is contained in said navigation contents of the record contents of said digital videodisc, or said communication line are embraced. In the thing equipped with the navigation engine which controls the playback output of said player section Said navigation engine To said navigation contents The contents of said playback control information included The language interpretation section and; to interpret The information processing section which executes the command contained in said playback control information interpreted in said language interpretation section; The element decoder and; which generate the 2nd image and voice data corresponding to the contents of said others which are contained in said navigation contents Based on the activation result of said command in said information processing section, said the 2nd image and voice data generated by said element decoder are compounded and outputted to said the 1st image and voice data reproduced by said video reconditioned engine. Or it consists of the output sections which choose and output either said the 1st image and voice data, or said the 2nd image and voice data. While said video reconditioned engine controls playback of said digital videodisc and outputs the event signal about the recovery status of said digital videodisc to said information processing section The video recovery control section constituted so that the status signal about the property of said digital videodisc might be outputted to said information processing section is included. Said information processing section control of said output section by said playback control information included in said navigation contents The digital video regenerative apparatus characterized by being constituted according to said event signal and/or said status signal from said video recovery control section so that it can perform.

[Claim 11] Said navigation contents are equipment according to claim 10 characterized by being constituted including the 2nd navigation contents gained from the exterior through the 1st navigation contents and said communication line reproduced from said digital videodisc so that control by said information processing section according to said event signal and/or said status signal may be performed also to any of control by said 1st and 2nd navigation contents.

[Claim 12] Equipment according to claim 10 or 11 characterized by being constituted so that said event signal may be generated corresponding to the menu call which calls the menu recorded on said digital videodisc, the title jump which switches the title reproduced from said digital videodisc, or the chapter jump which switches the chapter reproduced from said digital videodisc.

[Claim 13] It has further the user event control section to which said navigation engine generates the user event corresponding to user actuation of said digital video regenerative apparatus. It is constituted so that said information processing section may perform processing corresponding to the user event generated by said user event control section. Said output section is based on the activation result of the processing corresponding to said user event. Said the 2nd image and voice data generated by said element decoder are compounded and outputted to said the 1st image and voice data reproduced by said video reconditioned engine. Or equipment given in any 1 term of claim 9 characterized by being constituted so that either said the 1st image and voice data, or said the 2nd image and voice data may be chosen and outputted thru/or claim 12.

[Claim 14] In what reproduces the record contents which contain video contents and navigation contents from a digital videodisc with the volume space based on DVD video specification Said navigation contents are gained among the record contents which gained said video contents among the record contents reproduced from said digital videodisc, and were reproduced from the; aforementioned digital



videodisc. The approach characterized by being constituted according to the predetermined event corresponding to the contents of said gained video contents so that the contents of said gained navigation contents may be performed.

[Claim 15] Either [ at least ] video contents or navigation contents is gained from a digital videodisc with the volume space based on DVD video specification using the player section. Moreover, it sets to what gains another navigation contents from a communication line using a communication link interface. The condition that said player section is loaded with said digital videodisc, and said communication link interface is separated from said communication line is made into offline mode. The condition that said digital videodisc is discharged from said player section, and said communication link interface is connected to said communication line is made into online mode. When the condition that said player section is loaded with said digital videodisc, and said communication link interface is connected to said communication line is made into mixture mode The approach characterized by being constituted according to the predetermined shift Ruhr so that mode transition may be performed between said offline mode, online mode, and mixture mode when the trigger by loading / discharge of said digital videodisc, or connection/cutting of said communication line started.

[Claim 16] In the information media which has lead-in groove area, a volume space, and lead-out area, and includes volume / file structure information area, video area, and other record area in said volume space Said video area contains the video contents based on DVD video specification. Record area besides the above contains refreshable navigation contents in relation to the contents of said video contents. The information media characterized by being constituted so that said navigation contents may have the contents which cooperate, interlock or synchronize playback of said video contents, and playback of said navigation contents.

[Claim 17] In the information media which has lead-in groove area, a volume space, and lead-out area, and includes volume / file structure information area, and video area in said volume space The video contents to which said video area was based on DVD video specification, Refreshable navigation contents are included in relation to the contents of these video contents. The information media characterized by being constituted so that said navigation contents may have the contents which cooperate, interlock or synchronize playback of said video contents, and playback of said navigation contents.

[Claim 18] The information media according to claim 16 or 17 to which said navigation contents are characterized by including the playback control information the output method of the menu contained in said video contents or said navigation contents, an image, and/or voice was described to be.

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[Translation done.]

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**DETAILED DESCRIPTION**

---

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the en HANSUDO navigation system using the digital information medium based on DVD video specification.

[0002] Especially, navigation information is acquired from the contents of record, the Internet, etc. of a DVD videodisk, and it is related with the DVD video regeneration system which was rich in nearby variety from the conventional DVD video using this navigation information and which becomes reproducible.

[0003]

[Description of the Prior Art] The spread of DVD videos is progressing quickly as current and package media of a digital video. This DVD video is "DVD Specifications for Read-Only Disc published from DVD Forum in August, 1996. : Part 3 : VIDEO SPECIFICATIONS : It is standardized by Version 1.0."

[0004] The navigation data for managing the presentation data and this on which actual image and voice data were recorded are defined by the above-mentioned DVD video specification. And by this specification, the presentation data (playback information) containing video (animation/still picture) data, audio (voice) data, subpicture (subimage) data, etc. are multiplexed in accordance with the specification of the program stream (2048 bytes) defined by MPEG 2. Moreover, the program chain (PGC) and cel (Cell) which set the time amount configuration and playback sequence of the image and voice data to reproduce to navigation data (management information) are described, and functions, such as multi-angle-type playback, multi-story playback, and parental management (viewing-and-listening limit management to a junior etc.), are realized.

[0005]

[Problem(s) to be Solved by the Invention] However, only playback of the program stream of MPEG 2 currently recorded on the DVD videodisk (information record medium) in the conventional DVD video player based on the above-mentioned DVD video specification (version 1.0) is possible. Therefore, even if it records information other than the program stream of MPEG 2 on a DVD videodisk, in an old DVD video player, any information other than the program stream of MPEG 2 is unreproducible.

[0006] Information (hypertext information / HTML, a program, script macro, etc.) other than the program stream (DVD video contents) of MPEG 2 is stored in storage media, such as DVD, and there are "the data storage approach of storage media and interactive picture reproducer" which were indicated by JP,10-136314,A as a conventional technique which can reproduce information other than this MPEG 2 program stream. The interactive image reproduction method which reproduces multimedia information from network media, such as package media, such as an optical disk, and a Network Server, and its equipment are indicated by this official report. In this official report, specific condition playback data (a program, script macro, etc.) are stored in the archive medium.

[0007] However, there is no concrete indication of what should just include information other than the present DVD video specification (HTML, script, etc.) in the DS of the present DVD video specification (version 1.0) how in this official report, and the guarantee which can take the present DVD video

specification and compatibility does not have the DVD disk which incorporated the technique of this official report in it. (-- in this official report, the name of DVD is only mentioned as an example of an archive medium -- \*\*\*\* -- it does not pass and the consideration about compatibility with the present DVD video specification is not accepted.) -- although -- if compatibility with the present DVD video specification (version 1.0) is disregarded, the problem mentioned above "any information other than the program stream of MPEG 2 is unreproducible in the conventional DVD video player" is solvable. That is, playback of the computer program (MPEG encoding is not carried out) recorded on information other than the program stream of MPEG 2, for example, DVD-ROM, from the former in the personal computer DVD-ROM / with a certain DVD-RAM drive is possible.

[0008] Moreover, the interactive nature between users, such as multi-angle-type playback and multi-story playback, is secured to some extent also by the present DVD video specification (version 1.0). However, it is difficult to add the interactive nature to which the interactive nature was more rich in the DVD videodisk [ finishing / contents manufacture / become what was fixed to some extent after contents manufacture of a DVD videodisk, and ] at variety.

[0009] How to incorporate the information (playback control information, such as a markup language and a script language, data which this playback control information refers to) for adding interactive nature from the Internet etc. to a DVD video player as an approach of adding the interactive nature which was more rich in variety after contents manufacture can be considered. The thing near this view has an indication also in above-mentioned JP,10-136314,A (the interactive image reproduction method which reproduces multimedia information from network media is indicated by this official report).

[0010] However, when it is going to add the interactive nature which acquired multimedia information from network media and was rich in variety by the playback approach of a DVD videodisk, it sets. In invention of this official report, since there is no concrete consideration of compatibility to the present DVD video specification (version 1.0) In controlling interactively an actual DVD videodisk (not DVD-ROM but the DVD videodisk which recorded computer data etc.) using the information incorporated from the Internet etc. In what should just control the contents of playback of an actual DVD videodisk (video contents) how, it cannot grasp concretely.

[0011] Moreover, there is "a data synchronous regenerative apparatus of two or more media" indicated by JP,11-98467,A as another official report relevant to the above-mentioned patent official report. External media information is synchronized with disk information, and it is made to compound and display in this official report based on the timing data and the layout signal which the internal-storage section is made to memorize a required image from the Internet, and are memorized by this image and internal disk.

[0012] Although the information on an internal disk and the information acquired from the Internet can be synchronized and it can display in invention of this official report, it does not have the function which carries out selection activation of various methods of presentation suitably to be as displaying both to different timing \*\*\*\* [ , and ]. [ displaying only disk information ] [ displaying only the Internet acquisition information ] About controlling the Internet acquisition information to this JP,11-98467,A especially according to the playback condition of a DVD disk, there is no indication in any way. moreover, it does not have the function to give the change-over timing of these versatility methods of presentation by the playback control information (or playback control information incorporated from the Internet) beforehand recorded on user directions or a disk, either.

[0013] Furthermore, in controlling an actual DVD videodisk interactively using the information incorporated from the Internet etc., since invention of this official report does not have the concrete consideration of compatibility to the present DVD video specification (version 1.0), either, there is nothing from the thing or part (what kind of control signal should specifically be given from where to what kind of timing to where) which should just control the contents of playback of an actual DVD videodisk (video contents) how.

[0014] It is offering the en HANSUDO navigation system which can add the interactive nature which was more rich in playback of the video contents after manufacture at variety, this invention having been made in view of the above-mentioned situation, and that purpose securing compatibility (at least

downward compatibility) with the present DVD video specification.

[0015]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, the information media concerning the gestalt of 1 implementation of this invention that constitutes the above-mentioned system has lead-in groove area, a volume space, and lead-out area, and includes volume / file structure information area, video area, and other record area in said volume space. the video contents (10) to which said video area was based on DVD video specification in this information media (1 of drawing 30 ) -- containing -- said -- others -- in relation to the contents (a menu, chapter) of said video contents (10), refreshable ( drawing 5 , drawing 9 ) navigation contents (30) can be included now by record area. And said navigation contents (30) have the contents which cooperate, interlock or synchronize playback of said video contents (10), and playback of said navigation contents (30).

[0016] Or the equipment concerning the gestalt of 1 implementation of this invention that constitutes the above-mentioned system From a digital videodisc (1 of drawing 30 or drawing 31 ) with the volume space based on DVD video specification video contents (10) and the contents of playback (a menu --) of these video contents (10) The player section which reproduces the record contents which contain refreshable ( drawing 5 , drawing 9 ) navigation contents (30) in relation to a chapter (100), It has the video reconditioned engine (200) which reproduces said video contents (10) among the record contents of said digital videodisc (1), and the navigation engine (300). This navigation engine (300) reproduces said navigation contents (30) among the record contents of said digital videodisc (1), and according to the contents of these navigation contents (30), it is constituted so that playback of said navigation contents (30) and playback of said video contents (10) may be made to cooperate.

[0017] Or with the equipment concerning the gestalt of other operations of this invention that constitutes the above-mentioned system, said navigation engine (300) has the 1st interface (400) received from a digital videodisc (1) with the volume space based on said DVD video specification in said navigation contents (30), and the 2nd interface (400W) which obtains another navigation contents (30W) from a communication line (Internet). The condition that said player section (100) is loaded with said digital videodisc (1), and said 2nd interface (400W) is separated from said communication line here (network cutting) is made into offline mode (M1 of drawing 25 ). The condition that said digital videodisc (1) is discharged from said player section (100), and said 2nd interface (400W) is connected to said communication line (network connection) is made into online mode (M2 of drawing 25 ). When the condition that said player section (100) is loaded with said digital videodisc (1), and said 2nd interface (400W) is connected to said communication line (network connection) is made into mixture mode (M3 of drawing 25 ) If a predetermined change-over trigger (the trigger by insertion / discharge of a disk, or connection/cutting of a network; it corresponds to the mode change-over events E01-E06) starts According to the predetermined shift Ruhr (for example, drawing 29 ), mode transition is automatically performed between said offline mode, online mode, and mixture mode.

[0018] Or by the approach concerning the gestalt of 1 implementation of this invention that constitutes the above-mentioned system, the record contents which contain video contents (10) and navigation contents (30) from a digital videodisc (1 of drawing 30 or drawing 31 ) with the volume space based on DVD video specification are reproduced. By this approach, said video contents (10) are gained among the record contents reproduced from said digital videodisc (1) (ST40 of drawing 10 , ST180 grade of drawing 22 ), and said navigation contents (30) are gained among the record contents reproduced from said digital videodisc (1) (ST50 of drawing 10 , ST210 grade of drawing 22 ). And according to the predetermined events (the output of ST46 of drawing 10 , output of ST182 of drawing 22 , etc.) corresponding to the contents of said gained video contents (10), the contents of said gained navigation contents (30) are performed (ST194-ST220 of ST62 of drawing 10 , and drawing 22 ).

[0019] Or by the approach concerning the gestalt of other operations of this invention that constitutes the above-mentioned system, either [ at least ] video contents (10) or navigation contents (30) is gained from a digital videodisc (1 of drawing 30 or drawing 31 ) with the volume space based on DVD video specification using the player section (100), and another navigation contents (30W) are gained from a communication line (Internet) using a communication link interface (400W). The condition that said

player section (100) is loaded with said digital videodisc (1), and said communication link interface (400W) is separated from said communication line in this approach (network cutting) is made into offline mode (M1 of drawing 25 ). The condition that said digital videodisc (1) is discharged from said player section (100), and said communication link interface (400W) is connected to said communication line (network connection) is made into online mode (M2 of drawing 25 ). When the condition that said player section (100) is loaded with said digital videodisc (1), and said communication link interface (400W) is connected to said communication line (network connection) is made into mixture mode (M3 of drawing 25 ) If the trigger (it corresponds to the mode change-over events E01-E06) by loading / discharge of said digital videodisc (1), or connection/cutting of said communication line starts according to the predetermined shift Ruhr ( drawing 29 ), mode (automatically) transition is automatically performed between said offline mode, online mode, and mixture mode (ST530-ST538 of drawing 28 ) -- it is constituted like.

[0020]

[Embodiment of the Invention] Hereafter, with reference to a drawing, "the en HANSUDO navigation system using a digital information medium" concerning the gestalt of operation with this various invention is explained. Here, it explains on the assumption that the case where this system is applied to the regenerative apparatus and the playback approach of a DVD videodisk based on DVD video specification.

[0021] First, it explains from the disc data structure in consideration of compatibility with the existing DVD video specification (version 1.0).

[0022] Drawing 30 shows an example of the DS of the refreshable DVD videodisk 1 with DVD video playr 100 of drawing 1 mentioned later. In this example, the DVD video contents 10 (it has MPEG 2 program stream structure) of the same DS as the conventional DVD video specification (version 1.0) are stored in DVD video area, and the en HANSUDO navigation (it outlines Following ENAV) contents 30 as for which playback of the video contents 10 is made to what was rich in variety can be recorded now on other record area where existence is accepted also by this DVD video specification.

[0023] Here, although the contents of DVD video area are known from the former (setting to these contractors, such as a manufacturer of a DVD video playr), the contents are explained briefly.

[0024] That is, the record area of the DVD videodisk 1 includes lead-in groove area, a volume space, and lead-out area sequentially from inner circumference. A volume space can include now other record area (DVD AZA zone) as an option further including volume / file structure information area, and DVD video area (DVD video zone).

[0025] The above-mentioned volume / file structure information area are the area assigned for UDF (Universal Disk Format) bridge structure. The volume of a UDF bridge format is recognized according to PERT 2 of ISO/IEC13346. The tooth space which recognizes this volume consists of a continuous sector, and begins from the logical sector of the beginning of the volume space of drawing 30 . The first 16 logical sectors are reserved for the system usage specified by ISO9660. In order to secure compatibility with the existing DVD video specification (version 1.0), the volume / file structure information area of such contents are needed.

[0026] Moreover, management information called the video manager VMG and video contents called a video title set VTS (VTS#1 - VTS#n) are recorded on the above-mentioned DVD video area one or more. Although VMG is the management information to all VTS(s) that exist in DVD video area and is not illustrated, it contains control data VMGI, data VMGM\_VOBS for VMG menus (option), and the backup data of VMG. Moreover, although each VTS does not illustrate, it contains the control data VTST of VTS, data VTSM\_VOBS for VTS menus (option), data VTSTT\_VOBS of the contents (movie etc.) of VTS (title), and the backup data of VTST. In order to secure compatibility with the existing DVD video specification (version 1.0), the DVD video area of such contents is also needed.

[0027] The playback selection menu of each title (VTS#1 - VTS#n) etc. is beforehand given by the provider (maker of the DVD videodisk 1) using VMG, and the playback procedure of the playback chapter selection menu within a specific title (for example, VTS#1) or the contents of record (cel) etc. is beforehand given by the provider using VTST. Therefore, the viewer (user of a DVD video playr) of a

disk 1 can enjoy the contents of record of the disk 1 according to the menu of VMG/VTSI beforehand prepared by the provider, or the playback control information in VTSI (program chain information PGCI). However, by the conventional DVD video specification (version 1.0), a viewer (user) cannot reproduce the contents (a movie and music) of VTS by different approach from VMG/VTSI which the provider prepared.

[0028] It is the ENAV contents 30 of drawing 30 which were prepared for the structure which reproduces the contents (a movie and music) of VTS by different approach from VMG/VTSI which the provider prepared, or VMG/VTSI which the provider prepared adds different contents and is reproduced. the DVD video playr with which these ENAV contents 30 were manufactured based on the conventional DVD video specification (version 1.0) -- it cannot access (those contents cannot be used even if it is able to access) -- in the DVD video playr (player 100 grade of drawing 1 ) concerning implementation of this invention, it can access and those contents of playback can be used now.

[0029] The ENAV contents 30 are classifiable into ENAV playback information and the body of data of ENAV contents, if it sees logically. The body of data of ENAV contents is constituted so that data, such as voice, a still picture, a text, and an animation, may be included.

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TECHNICAL FIELD

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[Field of the Invention] This invention relates to the en HANSUDO navigation system using the digital information medium based on DVD video specification.

[0002] Especially, navigation information is acquired from the contents of record, the Internet, etc. of a DVD videodisk, and it is related with the DVD video regeneration system which was rich in nearby variety from the conventional DVD video using this navigation information and which becomes reproducible.

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PRIOR ART

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[Description of the Prior Art] The spread of DVD videos is progressing quickly as current and package media of a digital video. This DVD video is "DVD Specifications for Read-Only Disc published from DVD Forum in August, 1996. : Part 3 : VIDEO SPECIFICATIONS : It is standardized by Version 1.0." [0004] The navigation data for managing the presentation data and this on which actual image and voice data were recorded are defined by the above-mentioned DVD video specification. And by this specification, the presentation data (playback information) containing video (animation/still picture) data, audio (voice) data, subpicture (subimage) data, etc. are multiplexed in accordance with the specification of the program stream (2048 bytes) defined by MPEG 2. Moreover, the program chain (PGC) and cel (Cell) which set the time amount configuration and playback sequence of the image and voice data to reproduce to navigation data (management information) are described, and functions, such as multi-angle-type playback, multi-story playback, and parental management (viewing-and-listening limit management to a junior etc.), are realized.

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**EFFECT OF THE INVENTION**

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[Effect of the Invention] According to this invention, the interactive nature which was more rich in variety can be added to playback of DVD video contents, securing compatibility (at least downward compatibility) with the present DVD video specification (version 1.0).

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**TECHNICAL PROBLEM**

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[Problem(s) to be Solved by the Invention] However, only playback of the program stream of MPEG 2 currently recorded on the DVD videodisk (information record medium) in the conventional DVD video playr based on the above-mentioned DVD video specification (version 1.0) is possible. Therefore, even if it records information other than the program stream of MPEG 2 on a DVD videodisk, in an old DVD video playr, any information other than the program stream of MPEG 2 is unreproducible.

[0006] Information (hypertext information / HTML, a program, script macro, etc.) other than the program stream (DVD video contents) of MPEG 2 is stored in storage media, such as DVD, and there are "the data storage approach of storage media and interactive picture reproducer" which were indicated by JP,10-136314,A as a conventional technique which can reproduce information other than this MPEG 2 program stream. The interactive image reproduction method which reproduces multimedia information from network media, such as package media, such as an optical disk, and a Network Server, and its equipment are indicated by this official report. In this official report, specific condition playback data (a program, script macro, etc.) are stored in the archive medium.

[0007] However, there is no concrete indication of what should just include information other than the present DVD video specification (HTML, script, etc.) in the DS of the present DVD video specification (version 1.0) how in this official report, and the guarantee which can take the present DVD video specification and compatibility does not have the DVD disk which incorporated the technique of this official report in it. (-- in this official report, the name of DVD is only mentioned as an example of an archive medium -- \*\*\*\* -- it does not pass and the consideration about compatibility with the present DVD video specification is not accepted.) -- although -- if compatibility with the present DVD video specification (version 1.0) is disregarded, the problem mentioned above "any information other than the program stream of MPEG 2 is unreproducible in the conventional DVD video playr" is solvable. That is, playback of the computer program (MPEG encoding is not carried out) recorded on information other than the program stream of MPEG 2, for example, DVD-ROM, from the former in the personal computer DVD-ROM / with a certain DVD-RAM drive is possible.

[0008] Moreover, the interactive nature between users, such as multi-angle-type playback and multi-story playback, is secured to some extent also by the present DVD video specification (version 1.0). However, it is difficult to add the interactive nature to which the interactive nature was more rich in the DVD videodisk [ finishing / contents manufacture / become what was fixed to some extent after contents manufacture of a DVD videodisk, and ] at variety.

[0009] How to incorporate the information (playback control information, such as a markup language and a script language, data which this playback control information refers to) for adding interactive nature from the Internet etc. to a DVD video playr as an approach of adding the interactive nature which was more rich in variety after contents manufacture can be considered. The thing near this view has an indication also in above-mentioned JP,10-136314,A (the interactive image reproduction method which reproduces multimedia information from network media is indicated by this official report).

[0010] However, when it is going to add the interactive nature which acquired multimedia information from network media and was rich in variety by the playback approach of a DVD videodisk, it sets. In

invention of this official report, since there is no concrete consideration of compatibility to the present DVD video specification (version 1.0) In controlling interactively an actual DVD videodisk (not DVD-ROM but the DVD videodisk which recorded computer data etc.) using the information incorporated from the Internet etc. In what should just control the contents of playback of an actual DVD videodisk (video contents) how, it cannot grasp concretely.

[0011] Moreover, there is "a data synchronous regenerative apparatus of two or more media" indicated by JP,11-98467,A as another official report relevant to the above-mentioned patent official report.

External media information is synchronized with disk information, and it is made to compound and display in this official report based on the timing data and the layout signal which the internal-storage section is made to memorize a required image from the Internet, and are memorized by this image and internal disk.

[0012] Although the information on an internal disk and the information acquired from the Internet can be synchronized and it can display in invention of this official report, it does not have the function which carries out selection activation of various methods of presentation suitably to be as displaying both to different timing \*\*\*\* [ , and ]. [ displaying only disk information ] [ displaying only the Internet acquisition information ] About controlling the Internet acquisition information to this JP,11-98467,A especially according to the playback condition of a DVD disk, there is no indication in any way. moreover, it does not have the function to give the change-over timing of these versatility methods of presentation by the playback control information (or playback control information incorporated from the Internet) beforehand recorded on user directions or a disk, either.

[0013] Furthermore, in controlling an actual DVD videodisk interactively using the information incorporated from the Internet etc., since invention of this official report does not have the concrete consideration of compatibility to the present DVD video specification (version 1.0), either, there is nothing from the thing or part (what kind of control signal should specifically be given from where to what kind of timing to where) which should just control the contents of playback of an actual DVD videodisk (video contents) how.

[0014] It is offering the en HANSUDO navigation system which can add the interactive nature which was more rich in playback of the video contents after manufacture at variety, this invention having been made in view of the above-mentioned situation, and that purpose securing compatibility (at least downward compatibility) with the present DVD video specification.

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**MEANS**

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[Means for Solving the Problem] In order to attain the above-mentioned purpose, the information media concerning the gestalt of 1 implementation of this invention that constitutes the above-mentioned system has lead-in groove area, a volume space, and lead-out area, and includes volume / file structure information area, video area, and other record area in said volume space. the video contents (10) to which said video area was based on DVD video specification in this information media (1 of drawing 30 ) -- containing -- said -- others -- in relation to the contents (a menu, chapter) of said video contents (10), refreshable ( drawing 5 , drawing 9 ) navigation contents (30) can be included now by record area. And said navigation contents (30) have the contents which cooperate, interlock or synchronize playback of said video contents (10), and playback of said navigation contents (30).

[0016] Or the equipment concerning the gestalt of 1 implementation of this invention that constitutes the above-mentioned system From a digital videodisc (1 of drawing 30 or drawing 31 ) with the volume space based on DVD video specification video contents (10) and the contents of playback (a menu --) of these video contents (10) The player section which reproduces the record contents which contain refreshable ( drawing 5 , drawing 9 ) navigation contents (30) in relation to a chapter (100), It has the video reconditioned engine (200) which reproduces said video contents (10) among the record contents of said digital videodisc (1), and the navigation engine (300). This navigation engine (300) reproduces said navigation contents (30) among the record contents of said digital videodisc (1), and according to the contents of these navigation contents (30), it is constituted so that playback of said navigation contents (30) and playback of said video contents (10) may be made to cooperate.

[0017] Or with the equipment concerning the gestalt of other operations of this invention that constitutes the above-mentioned system, said navigation engine (300) has the 1st interface (400) received from a digital videodisc (1) with the volume space based on said DVD video specification in said navigation contents (30), and the 2nd interface (400W) which obtains another navigation contents (30W) from a communication line (Internet). The condition that said player section (100) is loaded with said digital videodisc (1), and said 2nd interface (400W) is separated from said communication line here (network cutting) is made into offline mode (M1 of drawing 25 ). The condition that said digital videodisc (1) is discharged from said player section (100), and said 2nd interface (400W) is connected to said communication line (network connection) is made into online mode (M2 of drawing 25 ). When the condition that said player section (100) is loaded with said digital videodisc (1), and said 2nd interface (400W) is connected to said communication line (network connection) is made into mixture mode (M3 of drawing 25 ) If a predetermined change-over trigger (the trigger by insertion / discharge of a disk, or connection/cutting of a network; it corresponds to the mode change-over events E01-E06) starts According to the predetermined shift Ruhr (for example, drawing 29 ), mode transition is automatically performed between said offline mode, online mode, and mixture mode.

[0018] Or by the approach concerning the gestalt of 1 implementation of this invention that constitutes the above-mentioned system, the record contents which contain video contents (10) and navigation contents (30) from a digital videodisc (1 of drawing 30 or drawing 31 ) with the volume space based on DVD video specification are reproduced. By this approach, said video contents (10) are gained among

the record contents reproduced from said digital videodisc (1) (ST40 of drawing 10 , ST180 grade of drawing 22 ), and said navigation contents (30) are gained among the record contents reproduced from said digital videodisc (1) (ST50 of drawing 10 , ST210 grade of drawing 22 ). And according to the predetermined events (the output of ST46 of drawing 10 , output of ST182 of drawing 22 , etc.) corresponding to the contents of said gained video contents (10), the contents of said gained navigation contents (30) are performed (ST194-ST220 of ST62 of drawing 10 , and drawing 22 ).

[0019] Or by the approach concerning the gestalt of other operations of this invention that constitutes the above-mentioned system, either [ at least ] video contents (10) or navigation contents (30) is gained from a digital videodisc (1 of drawing 30 or drawing 31 ) with the volume space based on DVD video specification using the player section (100), and another navigation contents (30W) are gained from a communication line (Internet) using a communication link interface (400W). The condition that said player section (100) is loaded with said digital videodisc (1), and said communication link interface (400W) is separated from said communication line in this approach (network cutting) is made into offline mode (M1 of drawing 25 ). The condition that said digital videodisc (1) is discharged from said player section (100), and said communication link interface (400W) is connected to said communication line (network connection) is made into online mode (M2 of drawing 25 ). When the condition that said player section (100) is loaded with said digital videodisc (1), and said communication link interface (400W) is connected to said communication line (network connection) is made into mixture mode (M3 of drawing 25 ) If the trigger (it corresponds to the mode change-over events E01-E06) by loading / discharge of said digital videodisc (1), or connection/cutting of said communication line starts according to the predetermined shift Ruhr ( drawing 29 ), mode (automatically) transition is automatically performed between said offline mode, online mode, and mixture mode (ST530-ST538 of drawing 28 ) -- it is constituted like.

[0020]

[Embodiment of the Invention] Hereafter, with reference to a drawing, "the en HANSUDO navigation system using a digital information medium" concerning the gestalt of operation with this various invention is explained. Here, it explains on the assumption that the case where this system is applied to the regenerative apparatus and the playback approach of a DVD videodisk based on DVD video specification.

[0021] First, it explains from the disc data structure in consideration of compatibility with the existing DVD video specification (version 1.0).

[0022] Drawing 30 shows an example of the DS of the refreshable DVD videodisk 1 with DVD video player 100 of drawing 1 mentioned later. In this example, the DVD video contents 10 (it has MPEG 2 program stream structure) of the same DS as the conventional DVD video specification (version 1.0) are stored in DVD video area, and the en HANSUDO navigation (it outlines Following ENAV) contents 30 as for which playback of the video contents 10 is made to what was rich in variety can be recorded now on other record area where existence is accepted also by this DVD video specification.

[0023] Here, although the contents of DVD video area are known from the former (setting to these contractors, such as a manufacturer of a DVD video player), the contents are explained briefly.

[0024] That is, the record area of the DVD videodisk 1 includes lead-in groove area, a volume space, and lead-out area sequentially from inner circumference. A volume space can include now other record area (DVD AZA zone) as an option further including volume / file structure information area, and DVD video area (DVD video zone).

[0025] The above-mentioned volume / file structure information area are the area assigned for UDF (Universal Disk Format) bridge structure. The volume of a UDF bridge format is recognized according to PERT 2 of ISO/IEC13346. The tooth space which recognizes this volume consists of a continuous sector, and begins from the logical sector of the beginning of the volume space of drawing 30 . The first 16 logical sectors are reserved for the system usage specified by ISO9660. In order to secure compatibility with the existing DVD video specification (version 1.0), the volume / file structure information area of such contents are needed.

[0026] Moreover, management information called the video manager VMG and video contents called a

video title set VTS (VTS#1 - VTS#n) are recorded on the above-mentioned DVD video area one or more. Although VMG is the management information to all VTS(s) that exist in DVD video area and is not illustrated, it contains control data VMGI, data VMGM\_VOBS for VMG menus (option), and the backup data of VMG. Moreover, although each VTS does not illustrate, it contains the control data VTSI of VTS, data VTSM\_VOBS for VTS menus (option), data VTSTT\_VOBS of the contents (movie etc.) of VTS (title), and the backup data of VTSI. In order to secure compatibility with the existing DVD video specification (version 1.0), the DVD video area of such contents is also needed.

[0027] The playback selection menu of each title (VTS#1 - VTS#n) etc. is beforehand given by the provider (maker of the DVD videodisk 1) using VMG, and the playback procedure of the playback chapter selection menu within a specific title (for example, VTS#1) or the contents of record (cel) etc. is beforehand given by the provider using VTSI. Therefore, the viewer (user of a DVD video player) of a disk 1 can enjoy the contents of record of the disk 1 according to the menu of VMG/VTSI beforehand prepared by the provider, or the playback control information in VTSI (program chain information PGCI). However, by the conventional DVD video specification (version 1.0), a viewer (user) cannot reproduce the contents (a movie and music) of VTS by different approach from VMG/VTSI which the provider prepared.

[0028] It is the ENAV contents 30 of drawing 30 which were prepared for the structure which reproduces the contents (a movie and music) of VTS by different approach from VMG/VTSI which the provider prepared, or VMG/VTSI which the provider prepared adds different contents and is reproduced. the DVD video player with which these ENAV contents 30 were manufactured based on the conventional DVD video specification (version 1.0) -- it cannot access (those contents cannot be used even if it is able to access) -- in the DVD video player (player 100 grade of drawing 1) concerning implementation of this invention, it can access and those contents of playback can be used now.

[0029] The ENAV contents 30 are classifiable into ENAV playback information and the body of data of ENAV contents, if it sees logically. The body of data of ENAV contents is constituted so that data, such as voice, a still picture, a text, and an animation, may be included. Moreover, ENAV playback information is constituted so that a markup language, a script language, etc. which described the playback approaches (selection the method of presentation, a playback procedure, a playback change-over procedure, and for playback etc.) of the body of ENAV contents data and/or the DVD video contents 10 may be included.

[0030] for example, as language used for playback control information HTML () [ Hyper Text Markup ] Markup languages, such as Language/XHTML (eXtensible Hyper Text Markup Language), and SMIL (Synchronized Multimedia Integration Language), Or it can use, combining a script language like ECMA(European Computer Manufacturers Association) Script or JavaScript etc. The syntax of the contents of description of the ENAV playback information described in such language is analyzed by the ENAV interpretation section 330 of drawing 1 mentioned later, and the contents of analysis are interpreted.

[0031] the above-mentioned ENAV playback information -- more -- concrete -- the file information (the information on the file to refer to --) of ENAV contents And when the file to refer to does not exist, or when [ even if a file exists, ] a playback device does not have the function which decodes the file, and when instead, the information on the file to refer to and arrangement information (the coordinate on the display screen of the object displayed --) And the information which shows the context when lapping with other objects, Size information (information which shows the size of each object displayed), synchronization information (information for making cooperate mutually or interlocking playback of DVD video contents, and playback of ENAV contents to predetermined timing), It can constitute including duration information (information which shows to [ from when ] when ENAV contents are displayed, or to [ from which timing ] which timing it is displayed).

[0032] If said ENAV playback information is used, the output method of the menu contained in the video contents 10 or the ENAV contents 30, an image, and/or voice can be described, for example (refer to drawing 7 later mentioned as an example of a menu output method, drawing 8, drawing 2 later mentioned as an example of a drawing 11 reference; image output method, drawing 3, and drawing 12 ;

refer to drawing 4 later mentioned as an example of the voice output approach).

[0033] Since contents other than other record area follow the present DVD video specification (version 1.0), even if the conventional DVD video playr is used for the DVD videodisk 1 of drawing 30 , it can reproduce the video contents 10 recorded on DVD video area (that is, it is compatible with the former).

[0034] the DVD video playr of the former [ contents / 30 / which were recorded on other record area / ENAV ] -- being unreproducible (or it being unable to use) -- in the DVD video playr ( drawing 1 ) concerning implementation of this invention, it can reproduce and can use. Therefore, the video recovery which was more rich in variety becomes possible, without limiting a provider only to the contents of VMG/VTSI prepared beforehand, if the ENAV contents 30 are reproduced using the DVD video playr concerning implementation of this invention (about the example of the video recovery which was rich in this variety, it mentions later, referring to drawing 1 - drawing 29 suitably).

[0035] Physically in the configuration of drawing 30 , the ENAV playback information mentioned above can also record what it is intermingled with the body of data of ENAV contents, and is recorded on a disk 1 according to an individual.

[0036] As the former approach, pack ENV\_PCK only for ENAV(s) is prepared, for example in the head (or after navigation pack NV\_PCK which is in a head within VOB) of an access unit (an equivalent for the video object unit VOB in the present DVD video specification), and there is the approach of recording ENAV playback information on a subdivision at this ENV\_PCK.

[0037] As the latter approach, for example like VMG (or VTSI) in DVD video area, a field different from the body of data of ENAV contents is prepared, and there is the approach of recording ENAV playback information on this another field. It is desirable for the DVD video playr ( drawing 1 ) concerning implementation of this invention to consist of this approach so that ENAV playback information may be read ahead of the body of data of ENAV contents (if the control approach of ENAV playback is read beforehand and it memorizes in memory, when the body of data of ENAV contents is read after that, that processing can be started without delay).

[0038] If it collects, the disk 1 of drawing 30 can be called information media constituted as follows. That is, this information media has lead-in groove area, a volume space, and lead-out area, and includes volume / file structure information area, video area, and other record area in said volume space based on DVD video specification. And the video contents 10 to which said video area was based on DVD video specification are included. said -- others -- record area -- the contents (a menu --) of said video contents 10 In relation to a chapter etc., the refreshable (reference, such as drawing 5 , drawing 9 , etc. which are mentioned later) navigation contents 30 are included. Said navigation contents 30 have the contents (refer to the broken-line arrow head of drawing 21 - drawing 23 ) which cooperate, interlock or synchronize playback of said video contents 10, and playback of said navigation contents 30.

[0039] Drawing 31 shows other examples of the DS of the refreshable DVD videodisk 1 with DVD video playr 100 of drawing 1 mentioned later. In this example, the DVD video contents 10 (it has MPEG 2 program stream structure) of the same DS as the conventional DVD video specification (version 1.0) are stored in DVD video area, and the ENAV contents 30 as for which playback of the video contents 10 is made to what was rich at variety can be recorded now on the tail side (after the record termination location of the video contents 10) of this DVD video area.

[0040] Or between a certain video title set (VTS#i) and another video title set (VTS#j!=VTS#i), although not illustrated, although it cannot access in the conventional DVD player, a configuration which records the ENAV contents 30 it enabled it to access is also possible in the DVD player concerning implementation of this invention. In the conventional DVD player, there is a thing which enables it to access the ENAV contents 30 as an example of the concrete approach prevent from accessing only by the commands (a jump command, a go two command, etc. with a special operation code) which are not defined by the conventional DVD video specification (version 1.0).

[0041] If it is indicated that VMG or VTSI mentioned above with reference to drawing 30 refers to only the record section (address) of the DVD video contents 10, the conventional DVD video playr will not access the ENAV contents 30 by VMG or VTSI. On the other hand in the DVD video playr ( drawing 1 ) concerning implementation of this invention, the ENAV mode which activates ENAV is formed, and

it can enable it to access to the tail of DVD video area in this ENAV mode. Then, the DVD video playr concerning implementation of this invention can access the ENAV contents 30 recorded on the tail side of DVD video area, and can use those contents now.

[0042] If it collects, the disk 1 of drawing 31 can be called information media constituted as follows. That is, this information media has lead-in groove area, a volume space, and lead-out area, and includes volume / file structure information area, and video area in said volume space. And said video area contains the refreshable navigation contents 30 in relation to the contents (a menu, chapter, etc.) of the video contents 10 based on DVD video specification, and these video contents 10, and said navigation contents 30 have the contents which cooperate, interlock or synchronize playback of said video contents 10, and playback of said navigation contents 30.

[0043] In addition, as a concrete approach of reproducing the ENAV contents 30 recorded on the disk 1 of drawing 30 or drawing 31, the selection carbon button of the ENAV contents 30 is prepared in the DVD menu (the menu of VMG, or menu of VTS), and there are an approach a user chooses an ENAV contents carbon button by the cursor key of remote control and actuation of an enter key, and the approach of accessing the ENAV contents 30 automatically by the internal command (navigation commands, such as the GoTo command and the Jump command) of a DVD video playr, for example.

[0044] What is necessary is just to perform it as follows, when using the former selection carbon button. That is, the contents (here ENAV contents 30) corresponding to the carbon button are reproduced by choosing and (selection) determining the carbon button (here ENAV contents selection carbon button) by which it was indicated by the menu (action). This approach is the same as the approach adopted with the existing DVD video playr.

[0045] When using the latter internal command, the GoTo command consists of the operation code, a reservation field, and a GoTo operand. In order to maintain conventional DVD video specification (version 1.0) and compatibility, although the configuration of this command remains as it is, the contents of an operation code and the operand can be changed into the thing in alignment with implementation of this invention. For example, since operation code "0000h"- "0003h" is the contents [ finishing / a definition / already ] by DVD video specification (version 1.0), implementation of this invention newly defines the operation code "0004h" which moves to the ENAV contents 30 as an operation code of the GoTo command. And what is necessary is just to write the information which shows the record location of the ENAV contents 30 in the operand of the GoTo command.

[0046] Moreover, the Jump command consists of the operation code, a Jump operand, and a reservation field. In order to maintain conventional DVD video specification (version 1.0) and compatibility, although the configuration of this command remains as it is, the contents of an operation code and the operand can be changed into the thing in alignment with implementation of this invention. For example, since operation code "3001h"- "3008h" is the contents [ finishing / a definition / already ] by DVD video specification (version 1.0), implementation of this invention newly defines the operation code "3009h" jumped to the ENAV contents 30 as an operation code of the Jump command. And what is necessary is just to write the information which shows the record location of the ENAV contents 30 in the operand of the Jump command.

[0047] In addition, the DVD video contents 10 of the DVD videodisk 1 illustrated by drawing 30 or drawing 31 can also contain the software with which it is not restricted to a music program with a movie, a multi-story expansion mold drama, and a multi-angle-type image etc., in addition higher interactive nature like a computer game is called for.

[0048] Drawing 1 is drawing explaining the example of a configuration of the "DVD video playr 100 with which the en HANSUDO navigation system (ENAV system) was incorporated" concerning the gestalt of 1 implementation of this invention. This DVD video playr 100 reproduces and processes those contents of record (the DVD video contents 10 and/or ENAV contents 30) from the en HANSUDO DVD videodisk 1 "with conventional DVD video specification (version 1.0) and compatibility" as shown in drawing 30 or drawing 31, incorporates communication lines, such as the Internet, to ENAV contents (a kind of Web contents) 30W, and processes.

[0049] In addition, in the block configuration of drawing 1, the DVD playback control section 220, the



user event control section 310, the event generation and a command / property processing section 320, and ENAV interpretation section 330 grade are realizable with the microcomputer (and/or, hardware logic) which achieves the function of each block configuration by the inclusion program (firmware) which is not illustrated. Specifically, processing of the flow chart Fig. of drawing 6 and others mentioned later can be performed with the microcomputer (not shown) which performs the above-mentioned firmware. The work area used in case this firmware is performed can be obtained using the semiconductor memory (and accepting the need hard disk) which is not illustrated in each block configuration.

[0050] The DVD video contents 10 with MPEG 2 program stream structure and the ENAV contents 30 including information other than MPEG 2 program stream structure (image information, such as an animation, a still picture, and animation, speech information, text information, etc.) are recorded on the disk 1 played by the player 100 of drawing 1. Moreover, Web contents, such as image information acquired from the Internet etc., speech information, and text information, are incorporated by the player 100 as ENAV contents 30W.

[0051] Here, all image, voice, and text information other than the MPEG 2 program stream recorded on the disk 1 will be called "ENAV contents (Enhanced Navigation contents)." The information (ENAV playback information) for synchronizing such information with the DVD video contents 10 (or cooperation or linkage), and reproducing in addition to an image, voice, and text information, is also included in these ENAV contents.

[0052] DVD video playr 100 of drawing 1 is equipped with the DVD video reconditioned engine 200 for reproducing and processing the MPEG 2 program stream (DVD video contents 10) recorded on the disk 1, and the ENAV engine 300 for reproducing and processing the ENAV contents 30 (and/or, 30W). This player 100 is the disk section (it is what can be constituted from a :conventional technique usually constituted as a DVD disk drive) which reads further the DVD video contents 10 and/or the ENAV contents 30 which were recorded on the disk 1. The user control unit which transmits the input (user operation / user actuation 40) by the user of a player 100 who omits illustration of the concrete configuration (the control panel of a player 100, and/or remote control: omit illustration of the concrete configuration), And it has the Internet connectivity section for connecting with communication lines, such as the Internet.

[0053] The DVD video reconditioned engine 200 is equipment for reproducing the DVD video contents 10 based on the existing DVD video specification (version 1.0), and is constituted including the DVD video recovery control section 220 which performs playback control of the decoder section 210 which decodes the crowded DVD video contents 10 which were read from the disk section, and the DVD video contents 10.

[0054] The decoder section 210 has the function which decodes the image data based on DVD video specification, existing voice data, and existing subimage data, respectively, and outputs the decoded image and the voice data D210. Thereby, the DVD video reconditioned engine 200 comes to have the same function as the reconditioned engine of the usual DVD video playr manufactured based on the existing DVD video specification (version 1.0). That is, the player 100 of drawing 1 can reproduce an image with MPEG 2 program stream structure, voice, etc. like the usual DVD video playr, and becomes reproducible [ the existing DVD videodisk (disk of the DVD video specification version 1.0) ] by this.

[0055] In addition, according to the "DVD control signal" outputted from the ENAV engine 300, the DVD video recovery control section 220 is constituted so that playback of the DVD video contents 10 can also be controlled. At the time of DVD video recovery, specifically, the DVD video recovery control section 220 can output the "DVD event signal" which shows the recovery status of the DVD video contents 10 to the ENAV engine 300, when a certain event (for example, a menu call and a title jump) occurs. The DVD video recovery control section 220 can output the "DVD status signal" which shows the property information on DVD video playr 100 (for example, the spoken language set as the player 100, subimage title language, playback actuation, playback positional information, a hour entry, the contents of the disk 1, etc.) to the ENAV engine 300 in that case (to suitable timing the output and coincidence of a DVD event signal, or before and behind that).

[0056] The ENAV engine 300 is constituted including an image and the voice output section 350 with the user event control section 310, the event generation and a command / property processing section 320, the ENAV interpretation section 330, and the element decoder 340.

[0057] The user event control section 310 is for performing control based on the user operation 40. user actuation (a playback title jump, playback start and halt a menu call --) A playback pause and the other corresponding user events From a user control unit to reception Or a user event control signal is received from event generation and a command / property processing section 320, and it is constituted so that user event (A) - (C) corresponding to the contents of user actuation or the user event control signal may be generated.

[0058] In the configuration of drawing 1 the user event control section 310 It is based on the "user event control signal" outputted from event generation and a command / property processing section 320. The user event signal transmitted by the user operation 40 Transmit to the DVD video recovery control section 220 of [01] DVD video reconditioned engine 200, or (User event signal (A)), [02] transfer is forbidden ("x") or it transmits to (user event signal (B)) [03] event generation and a command / property processing section 320 (user event signal (C)).

[0059] At this time, control as shown below is carried out to transfer of the above-mentioned user event signal.

[0060] [11] When outputting the image D210 of the DVD video reconditioned engine 200 (full video mode), the direct output of the user event signal (A) is carried out to the DVD video reconditioned engine 220. This is because the user operation 40 in a full video mode is the same as the thing at the time of the usual DVD video recovery.

[0061] [12] The following control is performed, when outputting the image D340 of the ENAV engine 300 (full ENAV mode), or when compounding the image D210 of the DVD video reconditioned engine 200, and the image D340 of the ENAV engine 300 and outputting to coincidence (MIKUSUDO frame mode).

[0062] [121] If a user event signal is outputted to event generation and a command / property processing section 320 (user event signal (C)), event generation and a command / property processing section 320 will output the function calls (menu call etc.) corresponding to the event to the DVD video recovery control section 220 of the DVD video reconditioned engine 200 as a DVD control signal.

[0063] [122] Output a user event at coincidence to both the DVD video reconditioned engine 200, and the event generation and a command / property processing section 320 (a user event signal (A) and user event signal (C)).

[0064] [123] When playback (for example, thing to which actuation was forbidden by the user operation control UOP defined by DVD specification current in that it is the playback approach which cannot respond by the DVD video reconditioned engine 200 under current operation \*\*\*\*) of the DVD video which a system does not mean may be performed, block transfer of a user event signal ("X" of a user event signal (B)). (prohibition or inhibition)

[0065] In addition, the contents of the user event signal (C) transmitted to event generation and a command / property processing section 320 are the forms of an ENAV event (and/or, ENAV property), and suitably, they can also be constituted so that it may send to the ENAV interpretation section 330. Then, the ENAV interpretation section 330 can create a layout control signal now with reference to the contents of the user event signal (C).

[0066] For example, when actuation to which the window size of contents 10 or 30 is changed into in drawing 3 (c) mentioned later by the cursor key of the remote control which a user does not illustrate, or the display position is shifted is carried out This actuation is made into a user event signal (C). In event generation and a command / property processing section 320 from the user event control section 310 Delivery, Change it into corresponding ENAV events (window size-change event etc.) and/or ENAV properties (the variable/parameter which shows the window size after modification), and it is changed into a corresponding layout control signal. It can send to the image output-control section 352.

[0067] In addition, about user event signal (A) - (C), it mentions later suitably with reference to the flow chart Fig. after drawing 14 .

[0068] Event generation and a command / property processing section 320 performs transmission and reception of a DVD status signal, a DVD event signal, and/or a DVD control signal between the DVD video recovery control sections 220, or performs transmission and reception of a user event and/or a user event control signal between the user event control sections 310. Further, event generation and a command / property processing section 320 is constituted so that transmission and reception of the ENAV interpretation section 330, an ENAV event, an ENAV property, and/or the ENAV command may be performed. That is, event generation and a command / property processing section 320 consists of outputting the inputted DVD status signal as an ENAV property, and outputting the inputted DVD event signal as an ENAV event signal, or changing and outputting the inputted ENAV command to a corresponding DVD control signal so that a role of the interface between the DVD video reconditioned engine 200 and the ENAV engine 300 may be played. And event generation and a command / property processing section 320 sends the signal which controls an image and/or an audio output state to an image and the voice output section 350 according to the contents of the ENAV command from the user event and/or the ENAV interpretation section 330 from a DVD status signal, a DVD event signal, and the user event control section 310 from the DVD video control section 220.

[0069] Event generation and a command / property processing section 320 If it has another way of speaking, it is based on the contents (command) interpreted in the ENAV interpretation section 330, or a user event from an input device. While exchanging the 1st signal (a DVD control signal, a DVD event signal, DVD status signal) about the recovery status of the DVD videodisk 1 between the DVD video recovery control sections 220 the 2nd signal (an ENAV event --) concerning the contents (script) of the ENAV contents 30 (and/or, 30W) in between the ENAV interpretation sections 330 It is constituted and it can be said that it is what controls the signal output state by the image and the voice output section 350 based on either [ at least ] the 1st signal for which it was exchanged, or the 2nd signal so that exchange of the ENAV command and an ENAV property may be performed.

[0070] If it has still more nearly another way of speaking, event generation and a command / property processing section 320 will change a control signal etc. between the DVD video reconditioned engine 200 and the ENAV engine 300, after it interprets the ENAV contents 30 (30W). After the processing section 320 interprets the <I> ENAV contents 30 (30W) which perform the following signal output / signal transformation, specifically (a) The "user event control signal" for controlling the user event corresponding to the user operation 40 inputted from the user control unit, (b) The "DVD control signal" which controls playback of the DVD video contents 10 in the DVD video reconditioned engine 200, And/or, "the image and voice output control signal" for switching the image and voice output from (c) DVD video reconditioned engine 200, and the image and voice output from the ENAV engine 300 are outputted. Moreover, the contents of the "DVD event signal" which shows the recovery status of the DVD video contents 10 sent from the <RO> DVD video reconditioned engine 200 (whether it is a menu call) Interpret that it is a title jump etc. and the contents of the interpreted DVD event signal It changes into the correspondence event signal defined in the ENAV contents 30 (30W) (for example, the DVD event signal of a menu call is changed into the event signal of the menu call in ENAV).

[0071] The contents of the "DVD status signal" which shows the property of DVD video playr 100 sent from the <Ha> DVD video reconditioned engine 200 (a spoken language how many words they are) current disk playback -- working one etc. is interpreted and it changes into the correspondence property signal defined in the ENAV contents 30 (30W) (for example, the DVD status signal which shows that a spoken language current in use is Japanese) The language used in ENAV is changed into the property signal specified as Japanese.

[0072] If it says generally, the ENAV interpretation section 330 analyzes syntax of the playback control information (ENAV playback information) included in ENAV contents 30W obtained from the ENAV contents 30 or the Internet obtained from the DVD videodisk 1, performs the interpretation, and has the function to move the ENAV engine 300. As a script language used for this ENAV playback information, a markup language called HTML/XHTML and SMIL which were mentioned above may be used, or a script language like ECMAScript may be used with the above-mentioned markup language.

[0073] The same technique as the syntax analysis and the interpretation in a well-known technique like

HTML/XHTML, SMIL or ECMAScript, or JavaScript is sufficient as the concrete method of performing syntax analysis and its interpretation of a markup or a script (microcomputer which stated the hardware to be used at the beginning of explanation of drawing 1 ). However, about the command and variable which are indicated in a script, since controlled systems differ, a difference arises. For the ENAV playback information that it uses in case this invention is carried out, the characteristic command and characteristic variable relevant to playback of a DVD videodisk and/or ENAV contents are used. For example, the command of answering a certain event and switching the contents of playback of DVD video or ENAV contents is peculiar to the markup and script in ENAV playback information.

[0074] As other examples of the markup, the command peculiar to a script, and variable in ENAV playback information Change magnitude of the image from the DVD video reconditioned engine 200 and/or the ENAV engine 300 (variable which specifies the size after the command which orders size change, and modification), or There are some (the variable which specifies the coordinate after the command which orders modification of a display position, and modification etc.: as shown in drawing 3 (c) which the candidate for a display mentions later, when carrying out overlapping on a screen, the variable which specifies the vertical physical relationship of a lap is also added) which change the arrangement. Or there are some (variable which specifies the class of the command which orders modification of the spoken language used, and language after modification) which change the voice level from the DVD video reconditioned engine 200 and/or the ENAV engine 300, or choose (the variable which specifies the voice level after the command which orders modification of voice level, and modification), and the spoken language used. Moreover, there are some (switch of a user event signal (A), a user event signal (B), and a user event signal (C)) which control a user event in the user event control section 310.

[0075] It is based on the command/variable of the markup of ENAV playback information, or a script which was illustrated above. The layout on the screen of the image (image data D352) which should be displayed with the external monitoring device which is not illustrated, The size of an image, the output timing of an image, the output time amount of an image, and/or the loudness level of sound of the voice (voice data D354) which should be reproduced from the external speaker which is not illustrated, The "layout control signal" which controls audio output timing and audio output time amount is sent to an image and the voice output section 350 from the ENAV interpretation section 330.

[0076] The element decoder 340 decodes data, such as voice contained in ENAV contents, a still picture, a text, and an animation, and contains the voice decoder, the still picture decoder, the text decoder, and the animation decoder corresponding to the candidate for decoding. For example, the voice data in the ENAV contents encoded by MPEG1 is decoded by the voice decoder, and is changed into incompressible voice data. Moreover, the still picture data encoded by MPEG or JPEG are decoded by the still picture decoder, and are changed into incompressible image data. Similarly, the video data encoded by MPEG 2 is decoded by the animation decoder, and is changed into an incompressible video data. Moreover, the text data contained in ENAV contents is decoded by the text decoder, and is changed into the text image data which can be superimposed in the image of an animation or a still picture. The these-decoded voice data, image data, a video data, and the image and voice data D340 that contain text image data suitably are sent to an image and the voice output section 350 from the element decoder 340.

[0077] An image and the voice output section 350 switch and choose the image and the voice data D340 decoded by the element decoder 340, and the image and voice data D210 which are outputted from the DVD video reconditioned engine 200, or mixes both (D340 and D210) suitably, and is constituted including the image output-control section 352 and the voice output control section 354.

[0078] The image output-control section 352 has the function which chooses the image (image part of D210) from the DVD video reconditioned engine 200, or the image (image part of D340) from the ENAV engine 300, and the function which performs magnitude modification of each image (D210 and D340) and/or migration of arrangement, and outputs both images (D210 and D340) at coincidence (as image data D352). Specifically, a digital image mixer switcher etc. can constitute.

[0079] The image output-control section 352 in the ENAV engine 300 "The image and voice output

control signal" outputted from event generation and a command / property processing section 320, And/or, it is based on the "layout control signal" outputted from the ENAV interpretation section 330. [ whether the image D210 from the DVD video reconditioned engine 200 is outputted (full video mode), and ] [ whether the image D340 from the ENAV engine 300 is outputted (full ENAV mode), and ] Or it is constituted so that either of whether both the image D210 from the DVD video reconditioned engine 200 and the image D340 from the ENAV engine 300 are compounded and outputted (MIKUSUDO frame mode) may be performed.

[0080] Moreover, the image output-control section 352 (1) when the image D210 is outputted only from the DVD video reconditioned engine 200 and the image D340 of the ENAV engine 300 is not outputted, choose the video output D210 of the DVD video reconditioned engine 200 as an image D352 of DVD video playr 100, or (2) when the image D340 is outputted only from the ENAV engine 300 and the image D210 of the DVD video reconditioned engine 200 is not outputted, choose the video output D340 of the ENAV engine 300 as an image D352 of DVD video playr 100, or (3) It also has the function which switches and chooses the video output D210 of the DVD video reconditioned engine 200, and/or the video output D340 of the ENAV engine 300 from a user control unit according to the output method which the user chose.

[0081] Furthermore, the output of an image can be started and ended to the timing specified with the layout control signal, only the specified time amount can continue the output of an image, or an image can be outputted from the specified location (for example, a chapter number and a hour entry).

[0082] Drawing 32 shows the example which outputted the image of the DVD video contents which consist of three chapters according to the ENAV playback information on ENAV contents based on a layout control signal. In this example, first of all, a part of image of a chapter 1 is reproduced, then a part of image of a chapter 3 is reproduced, and the animation of ENAV contents, a still picture, and/or a text are reproduced further, and finally the image of a chapter 2, the animation of ENAV contents, etc. are compounded, and it is reproducing.

[0083] The voice output control section 354 performs function which chooses the voice (voice part of D210) from the DVD video reconditioned engine 200, or the voice (voice part of D340) from the ENAV engine 300, and loudness-level-of-sound modification and/or mixing of each voice (D210 and D340), and has the function which outputs what compounded both voice (D210 and D340) (considering as voice data D354). Specifically, a digitized voice mixer switcher etc. can constitute.

[0084] The voice output control section 354 in the ENAV engine 300 "The image and voice output control signal" outputted from event generation and a command / property processing section 320, And/or, it is based on the ENAV interpretation section 330 or the "layout control signal" of which R output is done. Or [ compounding and outputting both the voice D210 from the voice output D210, the voice output D340 from the ENAV engine 300, or the DVD video reconditioned engine 200 from the DVD video reconditioned engine 200, and the voice D340 from the ENAV engine 300 ] It is constituted so that either may be performed. for example, when compounding and outputting both the voice D210 from the DVD video reconditioned engine 200, and the voice D340 from the ENAV engine 300, the voice output control section 354 According to description of the ENAV contents 30 (30W), the level of each voice (the voice data part of D210 and voice data part of D340) is adjusted and mixed, and voice data D354 is outputted so that it may mention later with reference to drawing 4.

[0085] Moreover, the voice output control section 354 (1) when voice D210 is outputted only from the DVD video reconditioned engine 200 and the voice D340 of the ENAV engine 300 is not outputted, choose the voice output D210 of the DVD video reconditioned engine 200 as voice data D354 of DVD video playr 100, or (2) when voice D340 is outputted only from the ENAV engine 300 and the voice D210 of the DVD video reconditioned engine 200 is not outputted, choose the voice output D340 of the ENAV engine 300 as voice data D354 of DVD video playr 100, or (3) It also has the function which switches and chooses the voice output D210 of the DVD video reconditioned engine 200, and/or the voice output D340 of the ENAV engine 300 from a user control unit according to the output method which the user chose.

[0086] Furthermore, an audio output can be started and ended to the timing specified with the layout

control signal, only the specified time amount can continue an audio output, or voice can be outputted from the specified location (for example, a chapter number and a hour entry).

[0087] Drawing 33 shows the example which outputted the voice of the DVD video contents which consist of one chapter according to the ENAV playback information on ENAV contents based on a layout control signal. In this example, after, reproducing a part of voice of a chapter 1 first of all, the silent section next exists, and compounding a part of voice of a chapter 1, and the voice of ENAV contents further and reproducing, the voice of ENAV contents is reproduced.

[0088] In addition, the ENAV engine 300 in DVD video playr 100 of drawing 1 is equipped with interface 400\* for sending the interface 400 for sending the ENAV playback information in the ENAV contents 30 read in the DVD videodisk 1 to the ENAV interpretation section 330, and the bodies of data in the read ENAV contents 30 (voice data, still picture data, text data, video data, etc.) to the element decoder 340. These interfaces 400 and 400\* constitute the interface (the 1st interface) different from the interface connection of drawing 1.

[0089] Moreover, DVD video playr 100 of drawing 1 is equipped with interface 400W\* for sending the bodies of data in interface 400W and ENAV contents 30W received for sending reception and the ENAV playback information in contents 30W received for ENAV contents 30W to the ENAV interpretation section 330 from communication lines, such as the Internet, (voice data, still picture data, text data, video data, etc.) to the element decoder 340. These interface 400W and 400W\* constitutes the interface connection (the 2nd interface) of drawing 1.

[0090] The component of the ENAV engine 300 of drawing 1 can be packed as follows, if an expression is changed. Namely, the language interpretation section 330 which the ENAV engine 300 analyzes the syntax of the contents of the playback control information (ENAV playback information) included in the \*ENAV contents 30 (or 30W), and is interpreted (ENAV interpretation section), \* The information processing section 320 which executes the command (ENAV command) which analyzes syntax in the ENAV interpretation section 330, and is contained in the interpreted playback control information (ENAV playback information) (event generation and a command / property processing section), \* The element decoder 340 which generates the image and the voice data D340 corresponding to the contents (data, such as voice, a still picture, a text, and an animation) of others which are contained in the ENAV contents 30 (or 30W), \* It is based on the activation result of the ENAV command in the information processing section 320. The image and the voice data D340 generated by the element decoder 340 are compounded and outputted to the image and the voice data D210 reproduced by the DVD video reconditioned engine 200. Or the output section 350 which chooses and outputs either an image and voice data D210 or an image and voice data D340 (an image and voice output section), \* It has the user event control section 310 which generates the user event corresponding to the user actuation (user operation) 40 of a DVD video regenerative apparatus.

[0091] here, the information processing section 320 performs processing corresponding to the user event generated by the user event control section 310 -- it is constituted like (for example, ST92 of drawing 14 mentioned later - ST116 grade). And it is constituted so that the output section 350 may compound and output the image and the voice data D340 generated by the element decoder 340 based on the activation result of the processing corresponding to a user event to the image and the voice data D210 reproduced by the DVD video reconditioned engine 200 or may choose and output either an image and voice data D210 or an image and voice data D340.

[0092] Drawing 2 is drawing explaining the example of a display in case the multi-framing output of the playback image by the side of DVD video contents and the playback image by the side of ENAV contents is carried out in the configuration of drawing 1.

[0093] The decoder section 210 in the DVD video reconditioned engine 200 of drawing 1 has the device which decodes and outputs information, such as an animation in the DVD video contents 10, voice, and a subimage, from the DVD videodisk 1 like the decoder section in the conventional DVD video playr. Drawing 2 (a) has illustrated the animation and/or subimage part (D210) in these DVD video contents 10.

[0094] Moreover, the element decoder 340 in the ENAV engine 300 has the function which decodes

information, such as an animation (animation is included) in ENAV contents (Web contents) 30W acquired from the ENAV contents 30 currently recorded on the DVD videodisk 1 of drawing 30 (or drawing 31), the Internet, etc., a still picture, voice, and a text, respectively, and outputs it. Drawing 2 (b) has illustrated two or more animation and/or still picture parts 30A-30C (D340) which are contained in these ENAV contents 30 (or 30W).

[0095] When compounding and outputting the DVD video contents image 10 of drawing 2 (a), and the ENAV contents images 30A-30C of drawing 2 (b), the image output-control section 352 of drawing 1 adjusts the screen size of the DVD video contents 10 for a layout control signal based on reception and the received layout control signal from the ENAV interpretation section 330 (here, it reduces). What is necessary is just to specifically operate the pixel of the DVD video contents 10 of drawing 2 (a) on a curtailed schedule so that it may fit in the in-every-direction pixel size of the margin area (area without the ENAV contents 30A-30C) of drawing 2 (b).

[0096] In this way, if actuation of inserting the contents 10 after adjusting the screen size of the DVD video contents 10 (contraction) in the margin area of drawing 2 (b) (video mixing) is performed in the image output-control section 352, the multi-framing video output D352 by which a DVD video contents playback image and an ENAV contents playback image as shown in drawing 2 (c) were compounded will be obtained.

[0097] Drawing 3 is drawing explaining the example of a display in case the multi-window (overlapping window) output of the playback image by the side of DVD video contents and the playback image by the side of ENAV contents is carried out in the configuration of drawing 1.

[0098] The approach of outputting both the image D210 from the DVD video reconditioned engine 200 and the image D340 from the ENAV engine 300 is not restricted to what carries out the multi-frame output of each to the screen which adjusted the size of each image like drawing 2 (c), and was divided according to description of the ENAV playback information in the ENAV contents 30 (or 30W).

description of ENAV playback information -- following -- the DVD video contents 10 (drawing 3 (a)) and the ENAV contents 30 (drawing 3 (b)) -- it is also possible to output the contents 10 and 30 each by which size adjustment was carried out as an overlapping window (multi-window) so that the size of each image may be adjusted and it may be illustrated by drawing 3 (c). The display of such an overlapping window (multi-window) is realizable if a well-known technique is used in a personal computer.

[0099] Drawing 4 is drawing explaining the example in the case of being compounded [ voice / by the side of ENAV contents / the playback voice by the side of DVD video contents, and / playback ] in the configuration of drawing 1 (mixing).

[0100] If it has a wave as shown in drawing 4 (a) when the voice output D210 from the DVD video reconditioned engine 200 sees by the analog wave now, and the voice output D340 from the ENAV engine 300 sees by the analog wave, it shall have a wave as shown in drawing 4 (c). In this case, since the loudness level of sound of the DVD video voice D210 differs from the loudness level of sound of the ENAV voice D340, if both are compounded as they are, it will be hard coming to catch a side with a small loudness level of sound. Therefore, in the voice output control section 354 of drawing 1, loudness-level-of-sound adjustment is performed so that the average loudness level of sound and the average loudness level of sound of the ENAV voice D340 of the DVD video voice D210 may become comparable (when carrying out in a digital field, level adjustment can be performed by the bit shift of voice data.). Moreover, when performing level adjustment in an analog field, an analog tape recorder etc. can perform using a well-known automatic-volume-control circuit.

[0101] As a result of the above-mentioned loudness-level-of-sound adjustment, the voice output D210 of drawing 4 (a) becomes like drawing 4 (b), and the voice output D340 of drawing 4 (c) becomes like drawing 4 (d). In this way, if the DVD video recovery sound (drawing 4 (b)) and ENAV contents playback sound (drawing 4 (d)) with which the loudness level of sound was arranged are compounded, it will become a wave-like voice output D354 like drawing 4 (e).

[0102] In the example of drawing 4, when it is reading on the other hand (for example, D210) without music of the voice compounded etc., there is an application which makes audio another side (D340) background music (BGM).



[0103] In addition, what is necessary is just to multiply loudness-level-of-sound adjustment of the ENAV contents playback sound D340 of drawing 4 (c) by damping coefficient ATT-2 (= between 0-1) predetermined that what is necessary is just to multiply loudness-level-of-sound adjustment of the DVD video recovery sound D210 of drawing 4 (a) by damping coefficient ATT-1 (= between 0-1) predetermined. What is necessary is just to give these damping coefficient ATT-1 and/or ATT-2 as a variable of the "sound-volume change command" defined in ENAV playback information.

[0104] Drawing 5 is drawing explaining the example of how a DVD video recovery output (DVD video menu) and an ENAV playback output (ENAV menu) change with internal commands. Moreover, drawing 6 is a flow chart Fig. which explains the example of processing of a DVD video reconditioned engine, and processing of an ENAV engine about the menu call by the command. Furthermore, drawing 7 shows the example of a menu display by the side of video contents (full video mode), drawing 8 shows the example of a menu display by the side of ENAV contents (full ENAV mode), and drawing 11 shows the example of a display of the synthetic menu of video contents and ENAV contents (MIKUSUDO frame mode (mixed mode)).

[0105] The case where activation of a menu call is now set as the last of the title (for example, VTS#1 of drawing 30 or drawing 31) contained in the DVD video contents 10 as a postcommand is assumed. In this case, the DVD video reconditioned engine 200 outputs that a menu call is performed (or thing for which the menu call was performed) as a DVD event signal to the ENAV engine 300 while performing a menu call at the time of title playback termination. The ENAV engine 300 which is in a standby condition at this time will perform ENAV engine actuation according to the ENAV playback information in the ENAV contents 30, if the DVD event signal sent from the DVD video reconditioned engine 200 is received.

[0106] The switch in the ENAV contents (ENAV menu) performed when the DVD event signal meaning for example, menu call activation has been sent, and the mode at this time (a full frame mode / full video mode, full ENAV mode, or MIKUSUDO frame mode) is described by the ENAV playback information mentioned above.

[0107] Hereafter, with reference to drawing 5 - drawing 8, and drawing 11, an example of the actuation relevant to the menu call (what is depended on the internal command of a DVD video player) in DVD video player 100 of drawing 1 is explained to a detail. Here, it explains taking the case of the case where a menu call is performed by the internal commands (PURIKO mand, postcommand, etc.) of a player 100.

[0108] Title playback is performed in the DVD video reconditioned-engine 200 side (the no of a step ST 10 and a step ST 12; it corresponds to the "DVD video recovery" of the maximum upper case by drawing 5). Termination of title playback performs a menu call with a postcommand (internal command of a player 100) (step ST 14; it corresponds to "Downarrow" of the maximum upper case by drawing 5). (yes of a step ST 12) Then, a menu display as the DVD event signal which shows a menu call to event generation and a command / property processing section 320 sent from the DVD video-recovery control section 220 (step ST 16), and the image data D352 of a menu sent to TV monitor which is not illustrated from the image output-control section 352, for example, shown in drawing 7 is performed on the display screen of TV monitor (step ST 18; it corresponds by drawing 5 to "a DVD video menu display" of the maximum upper case).

[0109] on the other hand, in the ENAV engine 300 side, after the preparation for which the ENAV interpretation section 330 incorporates the ENAV contents 30 (step ST 20), and exchanges a command / event / property between event generation and a command / property processing section 320 is completed, it is waiting for a certain event to arise (no [ of a step ST 22 and a step ST 24 ] --; drawing 5 -- the 2nd step of "event waiting" -- correspondence). Here, if "the DVD event signal which shows a menu call" is outputted in a step ST 16 and event generation and a command / property processing section 320 receives this DVD event signal (yes of a step ST 24; it corresponds to the 2nd step of "Downarrow" by drawing 5), the ENAV interpretation section 330 will confirm whether the contents of the ENAV menu exist in the incorporated ENAV contents 30.

[0110] When ENAV menu contents do not exist in the ENAV contents 30, (no of step ST 26) event



generation and a command / property processing section 320 outputs an image and a voice output control signal as "a full video mode which means outputting the image and voice of a DVD video reconditioned engine" (step ST 28). Then, an image and the voice output section 350 output the image and voice of the DVD video reconditioned engine 200 as an image and a voice output (D352, D354). And the ENAV engine 300 returns to the standby condition of the waiting for an event (step ST 30). [0111] On the other hand, when ENAV menu contents exist in the ENAV contents 30, the (yes of step ST 26) event generation and a command / property processing section 320 performs processing of the ENAV menu according to the ENAV command from the ENAV interpretation section 330 (step ST 32). At this time, event generation and a command / property processing section 320 outputs an image and a voice output control signal as "full ENAV mode meaning outputting the image and voice of an ENAV engine" (step ST 34). Then, an image and the voice output section 350 output the image (ENAV menu) and voice of the ENAV engine 300 as an image and a voice output (D352, D354).

[0112] The ENAV menu in the ENAV contents 30 consists of data, such as an animation (animation is included), a still picture, voice, and a text, as shown in drawing 8. And each data is sent to the each decoder in the element decoder 340, is decoded, is sent to the monitor TV which it does not illustrate as image data D352, and is displayed as an ENAV menu on the display screen of the monitor TV (step ST 36; it corresponds to the 2nd step of "ENAV menu display" by drawing 5). And the ENAV engine 300 returns to a standby condition again (step ST 30).

[0113] In addition, the data D210 of a DVD video menu are outputted from the DVD video reconditioned engine 200. and in the case where the data D340 of the ENAV menu are outputted from the ENAV engine 300 In case a video output change-over is performed by the image and voice output control signal from event generation and a command / property processing section 320 (it corresponds to the 3rd step of "Downarrow" by drawing 5) The ENAV engine 300 following either An instrument setup, user actuation, An ENAV menu display with the DVD video recovery in the :(1) full video mode which can carry out change-over selection according to ENAV playback information etc. (refer to the lower berth of drawing 5) to full ENAV mode, Or the DVD video menu display by the DVD video recovery in (2) full video mode to the full video mode.

[0114] Moreover, when the data D210 of a DVD video menu are outputted from the DVD video reconditioned engine 200 and the data D340 of the ENAV menu are outputted from the ENAV engine 300, you may make it display the menu which consists of both sides of the DVD video contents (animation etc.) 10 and the ENAV contents (animation etc.) 30 by the MIKUSUDO frame mode in processing of steps ST32-ST36. The example of a display in that case is shown in drawing 11.

[0115] A DVD video menu ( drawing 7 ) enables it to use an animation (for animation to be included) to a menu screen or a selection carbon button, respectively with the ENAV menu ( drawing 8 ), even if it can display only one animation. Furthermore, it also becomes possible to display the ENAV menu ( drawing 11 ) not only containing the animation of the DVD video contents 10 but the animation of ENAV contents using the video output D210 by the DVD video reconditioned engine 200 and the video output D340 with the ENAV engine 300.

[0116] Processing of drawing 6 can be summarized as follows. Namely, it sets to what reproduces the record contents which contain the DVD video contents 10 and the ENAV contents 30 from a DVD videodisk (1 of drawing 30 or drawing 31) with the volume space based on DVD video specification. The DVD video contents 10 are gained among the record contents reproduced from the DVD videodisk 1 (step ST 10). The ENAV contents 30 are gained among the record contents reproduced from the DVD videodisk 1 (step ST 20). The contents of the gained ENAV contents 30 are performed according to the predetermined event (step ST 16) corresponding to the contents of the gained DVD video contents 10 (step ST 32).

[0117] Here, the mode (interactive mode using the video mode, DVD contents, and/or ENAV contents using DVD video contents) and the display mode which are used in the system configuration of drawing 1 are explained. Although the display modes in a video mode are only full video modes ( drawing 7 etc.), three kinds, full video modes ( drawing 7 etc.), full ENAV modes ( drawing 8 etc.), and MIKUSUDO frame modes ( drawing 11 etc.), are shown in the display mode in an interactive mode.

Proper use of these methods of presentation can be performed by [ as being the following ]. That is, when performing only DVD video recovery purely in a video mode, full bidet male mode is used.

[0118] On the other hand, in an interactive mode, when only DVD video is displayed (however, the ENAV engine is working on the reverse side), a full video mode is used. Moreover, in the case where ENAV contents are displayed (however, DVD video recovery is also performed on the reverse side), full ENAV mode (full navigation mode) is used. Furthermore, a MIKUSUDO frame mode (mixed mode) is used in the case where a DVD video recovery image and the playback image of ENAV contents are intermingled, and are displayed when DVD video recovery is performed an ENAV engine working.

[0119] Drawing 9 is drawing explaining the example of how a DVD video recovery output (DVD video chapter playback) and an ENAV playback output (ENAV contents playback) change with internal commands. Moreover, drawing 10 is a flow chart Fig. which explains the example of processing of a DVD video reconditioned engine, and processing of an ENAV engine about chapter playback.

Furthermore, drawing 12 shows the example of a display of the synthetic image of video contents and ENAV contents (MIKUSUDO frame mode).

[0120] The case where activation of a title jump is now set as the last of the chapter A of the DVD video contents 10 (for example, let a certain par TOOBU title PTT contained in either [ of drawing 30 or drawing 31 ] VTS#1 - VTS#n be this chapter A) as a postcommand is assumed. In this case, the DVD video reconditioned engine 200 outputs that a title jump is performed (or thing for which the title jump was performed) as a DVD event signal to the ENAV engine 300 while performing a title jump to other chapters X at the time of playback termination of Chapter A. The ENAV engine 300 which is in a standby condition at this time will perform ENAV engine actuation according to the ENAV playback information in the ENAV contents 30, if the DVD event signal sent from the DVD video reconditioned engine 200 is received.

[0121] For the above-mentioned ENAV playback information, the description about the ENAV contents which should be performed when the DVD event signal meaning the title jump activation to Chapter X has been sent for example, and the description about a switch in the mode at this time (a full frame mode / full video mode, full ENAV mode, or MIKUSUDO frame mode) are made.

[0122] Hereafter, with reference to drawing 9 - drawing 12 , an example of the actuation relevant to the title jump / chapter change-over in DVD video playr 100 of drawing 1 (what is depended on the internal command of DVD video playr 100) is explained to a detail. Here, it explains taking the case of the case where a title jump is performed by the internal commands (PURIKO mand, postcommand, etc.) of a player 100.

[0123] In the DVD video reconditioned-engine 200 side, playback of the chapter A in a certain title is performed (the no of a step ST 40 and a step ST 42; it corresponds to "DVD video recovery (chapter A)" of the maximum upper case by drawing 9 ). Termination of playback of the chapter A of the title performs a title jump with a postcommand (internal command of a player 100) (step ST 44; it corresponds to "Downarrow" of the maximum upper case by drawing 9 ). (yes of a step ST 42) From the DVD video recovery control section 220 to then, event generation and a command / property processing section 320 The DVD event signal which shows a title jump is sent (step ST 46). To TV monitor which is not illustrated from the image output-control section 352, the image data D352 of the chapter X of a jump place title are sent, and the image of the chapter X is on the display of TV monitor, and is performed (step ST 48; it corresponds to "DVD video recovery (chapter X)" of the maximum upper case by drawing 9 ).

[0124] on the other hand, in the ENAV engine 300 side, after the preparation for which the ENAV interpretation section 330 incorporates the ENAV contents 30 (step ST 50), and exchanges a command / event / property between event generation and a command / property processing section 320 is completed, it is waiting for a certain event to arise (no [ of a step ST 52 and a step ST 54 ] --; drawing 9 -- the 2nd step of "event waiting" -- correspondence). Here, if "the DVD event signal which shows a title jump" is outputted in a step ST 46 and event generation and a command / property processing section 320 receives this DVD event signal (yes of a step ST 54; it corresponds to the 2nd step of "Downarrow" by drawing 9 ), the ENAV interpretation section 330 will confirm whether the contents of the ENAV

menu exist in the incorporated ENAV contents 30.

[0125] When the contents corresponding to "a title jump" do not exist in the ENAV contents 30, (no of step ST 56) event generation and a command / property processing section 320 outputs an image and a voice output control signal as "a full video mode which means outputting the image and voice of a DVD video reconditioned engine" (step ST 58). Then, an image and the voice output section 350 output the image and voice of the chapter X from the DVD video reconditioned engine 200 as an image and a voice output (D352, D354). And the ENAV engine 300 returns to the standby condition of the waiting for an event (step ST 60).

[0126] When the contents corresponding to "a title jump" exist in the ENAV contents 30, on the other hand, (Yes of a step ST 56), Event generation and a command / property processing section 320 According to the ENAV command from the ENAV interpretation section 330, processings (for example, processing which displays the text of the scenario of the scene when Chapter X is a scene with a drama) of the contents corresponding to the above "a title jump" are performed (step ST 62). At this time, event generation and a command / property processing section 320 outputs an image and a voice output control signal as "full ENAV mode meaning outputting the image and voice of an ENAV engine" (step ST 64). Then, an image and the voice output section 350 output the images (the above-mentioned example scenario text etc.) and voice of the ENAV engine 300 (for example, the supervisor who manufactured the drama or a dramatist's description voice etc.) as an image and a voice output (D352, D354).

[0127] As each data in the ENAV contents 30 is shown in drawing 12 , it consists of movie information (text, still picture, animation, or animation) 30A, continuity-with-drawings (still picture) 30B, scenario (text) 30C, and others (voice etc.). And each data is sent to the each decoder in the element decoder 340, is decoded, is sent to the monitor TV which it does not illustrate as image data D352, and is displayed as ENAV contents 30A-30C on the display screen of the monitor TV (step ST 66; it corresponds to the 2nd step of "ENAV contents playback" by drawing 9 ). And the ENAV engine 300 returns to a standby condition again (step ST 60).

[0128] In addition, the chapter X playback data D210 of DVD video are outputted from the DVD video reconditioned engine 200. and in the case where the playback data D340 of ENAV contents are outputted from the ENAV engine 300 In case a video output change-over is performed by the image and voice output control signal from event generation and a command / property processing section 320 (it corresponds to the 3rd step of "Downarrow" by drawing 9 ) The ENAV engine 300 following either An instrument setup, user actuation, ENAV contents playback with the DVD video (chapter A) playback by the (1) full video mode which can carry out change-over selection according to ENAV playback information etc. (refer to the lower berth of drawing 9 ) to full ENAV mode, Or DVD video (chapter X) playback by the DVD video (chapter A) playback by (2) full video mode to the full video mode.

[0129] Moreover, the playback data D210 of DVD video (chapter X) are outputted from the DVD video reconditioned engine 200. And when the playback data D340 of ENAV contents are outputted from the ENAV engine 300 (it corresponded to Chapter X) You may make it display the display screen which consists of both sides of the DVD video contents (animation etc.) 10 and the ENAV contents (a text, still picture, etc.) 30 by the MIKUSUDO frame mode in processing of steps ST62-ST66. The example of a display in that case is shown in drawing 12 . Here, DVD video recovery images (movie or one scene of drama) 10A is displayed on the location corresponding to the DVD video contents 10 of drawing 2 (c), and movie information 30A, continuity-with-drawings 30B, and scenario 30C are displayed on each location corresponding to the ENAV contents 30A-30C of drawing 2 (c) as various ENAV contents.

[0130] In addition, in the display (mixed mode) in the MIKUSUDO frame mode of drawing 12 , reproducing the scene of a movie or a drama as DVD video contents 10, it is made to synchronize with contents change (each scene switching) of the DVD video contents 10 (or linkage or cooperation), and information, such as a scenario, a continuity with drawings, information on a movie, and a performer's information, is switched and displayed as ENAV contents 30. ENAV contents 30W acquired from the exterior not only using the ENAV contents 30 currently recorded on the DVD videodisk 1 but using the Internet etc. as such information (it is the information on a synchronization or the scenario made to

interlock or cooperate to the playback image of DVD video) can also be used.

[0131] that is, the ENAV contents which are cooperated, interlocked / synchronized with contents playback of the DVD videodisk 1, and may change to versatility can use ENAV contents (Web contents) 30W which it is not restricted only to the ENAV contents 30 reproduced from the same disk 1, and were acquired from the exteriors (Internet etc.). ENAV contents 30W furthermore acquired from the ENAV contents 30 and/or the exterior from a disk 1 can be suitably used together, and a variegated change can also be brought about by the playback approach of the DVD video contents 10.

[0132] in addition, DVD video / ENAV hybrid menu if menu processing of drawing 6 and title jump processing of drawing 10 are combined, as shown in drawing 11 in the step ST 64 of drawing 10 -- a part of display area (for example, display area of video contents 10A) of drawing 12 -- things are also made.

[0133] The ENAV contents 30 corresponding to the title jump explained with reference to drawing 10 can be constituted from data, such as an animation (animation is included), a still picture, voice, and a text, and each data is sent to an each [ of the element decoder 340 ] decoder, and is decoded. And the decoded contents are displayed as ENAV contents on the display screen of the monitor TV which is not illustrated.

[0134] When the ENAV playback information in the ENAV contents 30 has the description which constitutes a screen by the DVD video contents 10 and the ENAV contents 30 at this time, event generation and a command / property processing section 320 outputs an image and a voice output control signal to an image and the voice output section 350 as a MIKUSUDO frame mode. Then, from the image output-control section 352 and the voice output control section 354, the image data D352 and voice data D354 with which the image and the voice D210 from the DVD video reconditioned engine 200, and the image and voice D340 from the ENAV engine 300 were mixed, respectively are outputted. that time -- the ENAV playback information on the ENAV contents 30 -- following -- the image output-control section 352 -- the image data D210 and D340 -- the size/location of each screen are adjusted, and it outputs as multi-framing ( drawing 2 (c) or drawing 12 ), or outputs as a multi window ( drawing 3 (c)). moreover, the voice output control section 354 -- voice data D210 and D340 -- after adjusting each level, it is made to mix suitably and outputs.

[0135] Processing of drawing 10 can be summarized as follows. Namely, it sets to what reproduces the record contents which contain the DVD video contents 10 and the ENAV contents 30 from a DVD videodisk (1 of drawing 30 or drawing 31 ) with the volume space based on DVD video specification. The DVD video contents 10 are gained among the record contents reproduced from the DVD videodisk 1 (step ST 40). The ENAV contents 30 are gained among the record contents reproduced from the DVD videodisk 1 (step ST 50). The contents of the gained ENAV contents 30 are performed according to the predetermined event (step STST46) corresponding to the contents of the gained DVD video contents 10 (step ST 62).

[0136] Drawing 13 is drawing explaining the example of how a DVD video recovery output (DVD video menu) and an ENAV playback output (ENAV menu) change with user actuation (user event). Moreover, drawing 14 is a flow chart Fig. which explains the example of processing of a DVD video reconditioned engine, and processing of an ENAV engine about the menu call by the user.

[0137] Hereafter, with reference to drawing 13 - drawing 14 , the actuation relevant to the menu call (what is depended on a demand from a user) in DVD video playr 100 of drawing 1 is explained. Here, the user of DVD video playr 100 of drawing 1 from the remote control which is not illustrated or from the front panel which DVD video playr 100 does not illustrate A menu button is pushed, a menu is displayed, a menu button is pushed again, and it is resume playback ([ when it is in the middle of playback of the DVD videodisk 1 and a menu button is pushed ]). Video recovery is interrupted, and when menu manipulation is completed, the example of processing in case actuation in which playback is automatically resumed from the playback interruption part of a disk 1 is performed is shown.

[0138] In the DVD video reconditioned-engine 200 side, title playback of a certain movie is performed, for example (the no of a step ST 70 and a step ST 72; it corresponds to the maximum upper case and the 3rd step of "first DVD video recovery" by drawing 13 ). title playback -- on the way -- if it comes out

and there is a menu call from a user, the user event signal (A) will be sent to the DVD video recovery control section 220 (step ST72 yes; -- drawing 13 -- the "first Downarrow" of the maximum upper case - correspondence). Then, the DVD video recovery control section 220 performs processing corresponding to this menu call, after storing temporarily the information on the playback time amount (or address) of the title playback part interrupted by this menu call (step ST 74). The DVD video menu (not shown) containing the result, for example, a voice selection carbon button, and a title language selection carbon button is displayed on the screen of Monitor TV (not shown) (step ST 76; it corresponds to "DVD video menu playback" of the maximum upper case by drawing 13 ). This menu display is continued until a user performs the following actuation (selection of voice/title, selection of this editing playback carbon button, etc.) (no [ of a step ST 78 ]).

[0139] Suppose that the user chose English voice and a Japanese title, for example, and pushed the menu button (or this editing playback carbon button in the displayed menu) of remote control again from the menu on display with the remote control which a hand does not illustrate. Then, the user event signal (A) corresponding to this user actuation is sent to the DVD video recovery control section 220 (step ST78 yes; drawing 13 "2nd Downarrow" of the maximum upper case correspondence). Then, the DVD video recovery control section 220 performs resume based on said playback hour entry (or address information) stored temporarily corresponding to this user event (step ST 80). Consequently, playback of the DVD videodisk 1 is automatically resumed from the scene in front of the menu call of the title by which playback interruption was carried out till then (step ST 82; it corresponds to the maximum upper case and the 3rd step of "2nd DVD video recovery" by drawing 13 ).

[0140] On the other hand, in the ENAV engine 300 side, after the preparation for which the ENAV interpretation section 330 incorporates the ENAV contents 30, and exchanges a command / event / property between event generation and a command / property processing section 320 is completed, it is waiting for a certain event to arise (the no of a step ST 92 and a step ST 94; it corresponds to the 2nd step of "first event waiting" by drawing 13 ).

[0141] here, if a user pushes the menu button of remote control (not shown) at hand (step ST94 yes; -- drawing 13 -- the 2nd step of "first Downarrow" -- correspondence), the user event control section 310 will output the user event signal (A) of a menu call, and (C) (step ST 96). Thereby, the DVD video recovery control section 220 receives the user event signal (A) of a menu call, and reception (yes of a step ST 72), event generation and a command / property processing section 320 receives the user event signal (C) of a menu call.

[0142] When the ENAV menu does not exist in the ENAV contents 30 (and/or, 30W) incorporated before a step ST 92, (no of step ST 98) event generation and a command / property processing section 320 outputs an image and a voice output control signal as "a full video mode which means outputting the image and voice of a DVD video reconditioned engine" (step ST 100). Then, an image and the voice output section 350 output the image and voice of the DVD video reconditioned engine 200 as an image and a voice output (D352, D354). And the ENAV engine 300 returns to the standby condition of the waiting for an event (step ST 102).

[0143] On the other hand, when ENAV menu contents exist in the ENAV contents 30 (and/or, 30W), the (yes of step ST 98) event generation and a command / property processing section 320 performs processing of the ENAV menu according to the ENAV command from the ENAV interpretation section 330 (step ST 104). At this time, event generation and a command / property processing section 320 outputs an image and a voice output control signal as "full ENAV mode meaning outputting the image and voice of an ENAV engine" (step ST 106). Then, an image and the voice output section 350 output the image (ENAV menu) and voice of the ENAV engine 300 as an image and a voice output (D352, D354).

[0144] The ENAV menu in the ENAV contents 30 (and/or, 30W) consists of data, such as an animation (animation is included), a still picture, voice, and a text, as shown in drawing 8 . And each data is sent to the each decoder in the element decoder 340, is decoded, is sent to the monitor TV which it does not illustrate as image data D352, and is displayed as an ENAV menu on the display screen of the monitor TV (step ST 108; it corresponds to the 2nd step and the 3rd step of "ENAV menu playback" by drawing

13 ). And the ENAV engine 300 returns to a standby condition again (step ST 102). the ENAV engine 300 is waiting for the following events (here remote control actuation of a user etc.) in this condition (no; of a step ST 110 -- drawing 13 -- the 2nd step of "2nd event waiting" -- correspondence).

[0145] here, if a user pushes the menu button of remote control (not shown) at hand (step ST110 yes; -- drawing 13 -- the 2nd step of "2nd Downarrow" -- correspondence), the user event control section 310 will output the user event signal (A) of resume, and (C) (step ST 112). Thereby, the DVD video recovery control section 220 receives the user event signal (A) of resume, and reception (yes of a step ST 78), event generation and a command / property processing section 320 receives the user event signal (C) of resume.

[0146] Then, event generation and a command / property processing section 320 outputs an image and a voice output control signal as "a full video mode which means outputting the image and voice of a DVD video reconditioned engine" (step ST 114). then, an image and the voice output section 350 output the image and voice of the DVD video reconditioned engine 200 as an image and a voice output (D352, D354) (the processing -- step ST82; -- drawing 13 -- the 3rd step of "2nd DVD video recovery" -- correspondence).

[0147] It is as follows when the main point of processing of drawing 14 is summarized. That is, during title playback (step ST 70) of the DVD video contents 10, when a user pushes the menu button of a user control unit (front panel of the remote control which is not illustrated or DVD video playr 100) (yes of a step ST 94), the ENAV engine 300 receives the signal of this menu button actuation by the user event control section 310 (yes of a step ST 72). The user event control section 310 outputs this signal to the DVD video recovery control section 220 of the DVD video reconditioned engine 200 as a user event signal (A), and outputs it to event generation and a command / property processing section 320 as a user event signal (C) (step ST 96).

[0148] Thereby, the DVD video reconditioned engine 200 receives the user event signal (A) meaning a menu call, and reproduces a DVD video menu (step ST 76).

[0149] On the other hand, reception of the user event signal (C) meaning a menu call of the ENAV engine 300 which suited the standby condition (step ST 92) operates it according to the playback control information of the markup and script in the ENAV contents 30 (and/or, 30W) (step ST 96). "The ENAV contents (ENAV menu)" performed when for example, the user event (C) signal meaning activation of a menu call has been sent, and "a switch in the mode (a full frame mode / full ENAV mode, or MIKUSUDO frame mode)" at this time are described by this playback control information.

[0150] The ENAV menu in the ENAV contents 30 (and/or, 30W) consists of things, such as an animation (animation is included), a still picture, voice, and a text, and each data is sent to each decoder of the element decoder 340, is decoded, and is displayed as an ENAV menu (step ST 108). At this time, event generation and a command / property processing section 320 outputs an image and a voice output control signal as full ENAV mode which means an output for the image and voice of an ENAV engine. Then, an image and the voice output section 350 output the image and voice of the ENAV engine 300 (D340) as an image and a voice output (D352, D354). When ENAV menu contents do not exist in the ENAV contents 30 (and/or, 30W), (No [ of a step ST 98 ]), Event generation and a command / property processing section 320 outputs an image and a voice output control signal as a full video mode which means an output for the image of a DVD video reconditioned engine. An image and the voice output section 350 output the image and voice of a DVD video reconditioned engine (D210) as an image and a voice output (D352, D354). At this time, an ENAV engine returns to a standby condition again (step ST 102).

[0151] Then, during menu playback (steps ST76 and ST108; the ENAV menu is displayed, respectively at the time of a DVD video menu and full ENAV mode at the time of a full video mode), when a user pushes the menu button of a user control unit (front panel of remote control or DVD video playr 100) (yes of a step ST 110), the ENAV engine 300 receives this signal by the user event control section 310. The user event control section 310 outputs this signal to the DVD video recovery control section 220 of the DVD video reconditioned engine 200 as a user event signal (A), and outputs it to event generation and a command / property processing section 320 as a user event signal (C) (step ST 112).

[0152] Thereby, the DVD video reconditioned engine 200 receives the user event signal (A) meaning resume, and returns to the DVD video title which was reproducing the point (steps ST80-ST82).

[0153] On the other hand, with the ENAV engine 300 under ENAV menu activation If the user event signal (C) meaning resume is received, the playback control information of the markup and script in the ENAV contents 30 (and/or, 30W) will be followed. Event generation and a command / property processing section 320 outputs an image and a voice output control signal as a full video mode, and an image and the voice output section 350 output the image and voice of the DVD video reconditioned engine 200 (D210) as an image and a voice output (step ST 114). At this time, ENAV engine 300 the very thing returns to a standby condition (step ST 116). That is, DVD video player 100 which was performing the ENAV menu returns to playback of a DVD video title (resume).

[0154] Drawing 15 is drawing explaining the example of how a DVD video recovery output (a DVD video menu or playback pause) and an ENAV playback output (ENAV menu) change with user actuation (user event). Moreover, drawing 16 and drawing 17 are flow chart Figs. which explain the example of processing of a DVD video reconditioned engine, and processing of an ENAV engine about the menu call or playback pause by the user.

[0155] Hereafter, with reference to drawing 15 - drawing 17, other examples of the actuation relevant to the menu call (what is depended on a demand from a user) in DVD video player 100 of drawing 1 are explained. Here, the user of DVD video player 100 of drawing 1 from the remote control which is not illustrated or from the front panel which DVD video player 100 does not illustrate A menu button is pushed, a menu is displayed, a menu button is pushed again, and it is resumption of playback ([ when it is in the middle of playback of the DVD videodisk 1 and a menu button is pushed ]). Video recovery stops, and when menu manipulation is completed, the example of processing in case actuation in which playback is automatically resumed from the halt part of a disk 1 is performed is shown.

[0156] In the DVD video reconditioned-engine 200 side, title playback of a certain movie is performed, for example (the no of the step ST 120 of drawing 16, and a step ST 122; it corresponds to the maximum upper case and the 3rd step of "first DVD video recovery" by drawing 15). title playback -- on the way - - if it comes out and there is actuation of a menu call from a user, the DVD control signal corresponding to the actuation will be sent to the DVD video recovery control section 220 from the ENAV engine 300 (step ST122 yes; -- drawing 15 -- the "first Downarrow" of the maximum upper case -- correspondence). Then, the DVD video recovery control section 220 performs this menu call or processing corresponding to pause-on, after suspending title playback with the DVD control signal meaning this menu call or pause-on (step ST 124). Consequently, still playback of the static image of the moment the DVD video menu (not shown) was displayed on the screen of Monitor TV (not shown), or playback stopped is carried out on a screen (the step ST 126 of drawing 17; it corresponds to "DVD video recovery <a pause or a menu>" of the maximum upper case by drawing 15). This menu display or still playback is continued until a user performs the following actuation (menu button actuation, pause button grabbing, etc.) (no [ of a step ST 128 ]).

[0157] Here, if a menu button is pushed with the remote control which a user does not illustrate, the DVD control signal corresponding to this user actuation will be sent to the DVD video recovery control section 220 from the ENAV engine 300 (step ST128 yes; drawing 15 "2nd Downarrow" of the maximum upper case correspondence). Then, the DVD video recovery control section 220 performs resume which cancels a pause (reproductive halt condition) or was mentioned above with reference to drawing 14 with the DVD control signal (it is pause-off when a menu is performed at a step ST 124 and pause-on is performed at resume or a step ST 124) corresponding to this user event (step ST 130). Consequently, playback of the DVD videodisk 1 is automatically resumed from the scene which playback had halted till then (step ST 132; it corresponds to the maximum upper case and the 3rd step of "2nd DVD video recovery" by drawing 15).

[0158] On the other hand, in the ENAV engine 300 side, after the preparation for which the ENAV interpretation section 330 incorporates the ENAV contents 30, and exchanges a command / event / property between event generation and a command / property processing section 320 is completed, it is waiting for a certain event to arise (the no of the step ST 142 of drawing 16, and a step ST 144; it



corresponds to the 2nd step of "first event waiting" by drawing 15).

[0159] here, if a user pushes the menu button of remote control (not shown) at hand (step ST144 yes; -- drawing 15 -- the 2nd step of "first Downarrow" -- correspondence), the script corresponding to [ in the ENAV interpretation section 330 ] a menu call to the ENAV contents 30 (and/or, 30W) will confirm whether it is contained in ENAV playback information (step ST 146). (No [ of a step ST 146 ]), when the script corresponding to a menu call is not contained in ENAV playback information, the ENAV interpretation section 330 notifies that to event generation and a command / property processing section 320. Then, event generation and a command / property processing section 320 notifies that to the user event control section 310 further. Then, the user event control section 310 outputs the user event signal (B) which blocks the user event at that time (when there is no script corresponding to a menu call in ENAV playback information) (inhibition) (the signal of "X" outputted from the user event control section 310 of drawing 1; step ST 148), and returns to the condition of the waiting for an event.

[0160] On the other hand, when the script corresponding to a menu call is contained in the ENAV contents 30 (and/or, 30W) in ENAV playback information, the (yes of step ST 146) event generation and a command / property processing section 320 is changed into the DVD control signal for moving from the ENAV command (command corresponding to a menu call in ENAV playback information) received from the ENAV interpretation section 330 to pause-on / menu display from a menu call (step ST 150). In this way, obtained "pause-on / menu" The DVD control signal of \*\* is outputted to the DVD video recovery control section 220 from event generation and a command / property processing section 320 (step ST 152).

[0161] At this time, when the ENAV menu does not exist in the ENAV contents 30 (and/or, 30W) incorporated before a step ST 142, (no of step ST 154) event generation and a command / property processing section 320 outputs an image and a voice output control signal as "a full video mode which means outputting the image and voice of a DVD video reconditioned engine" (step ST 156). Then, an image and the voice output section 350 output the image and voice of the DVD video reconditioned engine 200 as an image and a voice output (D352, D354). And the ENAV engine 300 returns to the standby condition of the waiting for an event (the step ST 158 of drawing 17).

[0162] On the other hand, when ENAV menu contents exist in the ENAV contents 30 (and/or, 30W), the (yes of step ST 154 of drawing 16) event generation and a command / property processing section 320 performs processing of the ENAV menu according to the ENAV command from the ENAV interpretation section 330 (step ST 160). At this time, event generation and a command / property processing section 320 outputs an image and a voice output control signal as "full ENAV mode meaning outputting the image and voice of an ENAV engine" (step ST 162). Then, an image and the voice output section 350 output the image (ENAV menu) and voice of the ENAV engine 300 as an image and a voice output (D352, D354).

[0163] The ENAV menu in the ENAV contents 30 (and/or, 30W) consists of data, such as an animation (animation is included), a still picture, voice, and a text, as mentioned above. And each data is sent to the each decoder in the element decoder 340, is decoded, is sent to the monitor TV which it does not illustrate as image data D352, and is displayed as an ENAV menu on the display screen of the monitor TV (the step ST 164 of drawing 17; it corresponds to the 2nd step and the 3rd step of "ENAV menu playback" by drawing 15). And the ENAV engine 300 returns to a standby condition again (step ST 158). the ENAV engine 300 is waiting for the following events (here remote control actuation of a user etc.) in this condition (no; of a step ST 166 -- drawing 15 -- the 2nd step of "2nd event waiting" -- correspondence).

[0164] here, if a user pushes the 2nd menu button from remote control (not shown) at hand (step ST166 yes; -- drawing 15 -- the 2nd step of "2nd Downarrow" -- correspondence), the ENAV interpretation section 330 will confirm whether the script corresponding to resume is contained in the ENAV playback information on the ENAV contents 30 (and/or, 30W) (step ST 168). (No [ of a step ST 168 ]), when the script corresponding to resume is not contained in ENAV playback information, the ENAV interpretation section 330 notifies that to event generation and a command / property processing section 320, and event generation and a command / property processing section 320 notifies that to the user



event control section 310 further. Then, the user event control section 310 outputs the user event signal (B) which blocks the user event at that time (when there is no script of resume correspondence in ENAV playback information) (inhibition) (the signal of "X" outputted from the user event control section 310 of drawing 1; step ST 170), and returns to the condition of the waiting for an event.

[0165] On the other hand, when the script corresponding to resume is contained in the ENAV playback information on the ENAV contents 30 (and/or, 30W), the (yes of step ST 168) event generation and a command / property processing section 320 is changed into the DVD control signal for moving from the ENAV command (command corresponding to resume in ENAV playback information) received from the ENAV interpretation section 330 to pause-off / resume playback from the menu call condition before it (step ST 172). In this way, obtained "pause-off / resume playback" The DVD control signal of \*\* is outputted to the DVD video recovery control section 220 from event generation and a command / property processing section 320 (step ST 174).

[0166] At this time, event generation and a command / property processing section 320 outputs an image and a voice output control signal as "a full video mode which means outputting the image and voice of a DVD video reconditioned engine" (step ST 176). Then, an image and the voice output section 350 output the image and voice of the DVD video reconditioned engine 200 as an image and a voice output (D352, D354). And the ENAV engine 300 returns to the standby condition of the waiting for an event (step ST 178).

[0167] It is as follows when the main point of processing of drawing 16 and drawing 17 is summarized. That is, during title playback (step ST 120) of the DVD video contents 10, when a user pushes the menu button of a user control unit (front panel of remote control or DVD video player 100) (yes of a step ST 144), the ENAV engine 300 receives this signal by the user event control section 310. The user event control section 310 outputs this signal to event generation and a command / property processing section 320 as a user event signal (C). When user operation 40 which is not expected as a user event is performed by the user control unit at this time (no [ of a step ST 146 ]), event generation and a command / property processing section 320 outputs the user event control signal (user event signal (B)) for "preventing the user event corresponding to the user operation at that time" (step ST 148). By carrying out like this, it becomes possible in the user event control section 310 to forbid "a specific event should be transmitted according to the script described by ENAV contents."

[0168] That is, even if it is right description as ENAV playback information in the ENAV contents 30 (or 30W) by preparing suitably processing like the step ST 148 of drawing 16, or the step ST 170 of drawing 17, when description of the script includes the contents (a command, parameter, etc.) which cannot respond in the DVD video reconditioned engine 200 "in the present operation", the event corresponding to description of the script can be block (inhibition).

[0169] In the above-mentioned script, it can describe outputting a "pause-on" (or "menu") command as a DVD control signal to the ENAV contents (ENAV menu) performed when the user event signal (C) meaning activation of a menu call has been sent, a switch in the mode at this time (a full frame mode / full ENAV mode, or MIKUSUDO frame mode), and the DVD video recovery control section 220 of the DVD video reconditioned engine 200.

[0170] As the ENAV menu in the ENAV contents 30 (and/or, 30W) was mentioned above, it consists of things, such as an animation (animation is included), a still picture, voice, and a text, and each data is sent to each decoder of the element decoder 340, is decoded, and is displayed as an ENAV menu. At this time, the image and voice output control signal from event generation and a command / property processing section 320 are outputted for the image of the ENAV engine 300 as full ENAV mode meaning an output, and the image and voice of the ENAV engine 300 (D340) are outputted as the image and a voice output from an image and the voice output section 350 (D352, D354) (step ST 162). Into the ENAV contents 30 (and/or, 30W), when ENAV menu contents do not exist, a (no of step ST 154) image and a voice output control signal are outputted for the image of the DVD video reconditioned engine 200 as a full video mode which means an output, and the image and voice of the DVD video reconditioned engine 200 (D210) are outputted as an image and a voice output (D352, D354) (step ST 156). At this time, the ENAV engine 300 returns to a standby condition again (step ST 158).

[0171] On the other hand, the DVD (yes of step ST 122) video reconditioned engine 200 which received the "pause-on" (or "menu") command as a DVD control signal performs a reproductive halt from the playback condition (step ST 120) of the DVD video contents 10 (step ST 124). (When a "menu" command is received at a step ST 122, a DVD video menu display is performed at a step ST 124.) Then, during menu playback (steps ST126 and ST164; the ENAV menu is displayed at the time of a DVD video menu and full ENAV mode at the time of a full video mode), when a user pushes again the menu button of a user control unit (front panel of remote control or DVD video playr 100) (yes of a step ST 166), as for the ENAV engine 300, this signal is received by the user event control section 310. Then, the user event control section 310 outputs this signal to event generation and a command / property processing section 320 as a user event signal (C).

[0172] Here in the script in the ENAV contents 30 (and/or, 30W) For example, "the thing which the ENAV engine 300 returns to a standby condition when the user event signal (C) meaning resume has been sent", A switch in the mode at this time (a full frame mode / full ENAV mode, or MIKUSUDO frame mode), Outputting a "pause-off" command (it being a "resume" command when the "menu" command is being outputted) as a DVD control signal to the DVD video recovery control section 220 of the DVD video reconditioned engine 200 is described.

[0173] That is, by receiving the user event signal (C) meaning resume, the ENAV engine 300 can stop activation of a menu, and can be in a standby condition (step ST 178), and, on the other hand, the DVD video reconditioned engine 200 can resume playback of a title (step ST 132). Moreover, the image and voice of the DVD video reconditioned engine 200 (D210) are outputted as an image and a voice output (D352, D354) by outputting the image and voice output control signal with which event generation and a command / property processing section 320 means a full video mode.

[0174] Drawing 18 is drawing explaining the case where reproduce the ENAV content 1 before chapter 1 playback when a DVD video reconditioned engine carries out continuation playback of the chapters 1-4, and the ENAV content 2 is reproduced synchronizing with playback of a chapter 1 and a chapter 2, and the ENAV content 3 is reproduced synchronizing with playback of a chapter 3 and a chapter 4. Hereafter, with reference to drawing 18, an example of how playback of the ENAV contents 30 (or 30W) and playback of video contents (chapter) synchronize (or linkage or cooperation) is explained.

[0175] First, the system model of the equipment (DVD video playr 100) with which the above is performed first is explained briefly.

[0176] Interactive DVD video playr 100 mentioned above with reference to <system-model> drawing 1 consists of a DVD video reconditioned engine 200 which reproduces the DVD video contents 10, and an ENAV engine 300 which reproduces the ENAV contents 30 (and/or, 30W). The DVD reconditioned engine 200 outputs the signal of a "DVD event" and the "DVD status" to the event / command handler 320 in the ENAV engine 300 (equivalent to event generation and a command / property processing section), in order to notify the event or property in the DVD video reconditioned engine 200.

[0177] The event / command handler 320 in the ENAV engine 300 output a "ENAV event" and a "ENAV property" to the ENAV interpreter 330 in an ENAV engine (equivalent to the ENAV interpretation section), in order to answer a "DVD event" and the "DVD status" and to notify an event and a property.

[0178] The ENAV interpreter 330 outputs the "ENAV command" to an event / command handler 320, in order to control the part (the image and voice output section 350 grade) and DVD video recovery in the ENAV engine 300. When the "ENAV command" is a command for DVD video recovery control, an event / command handler 320 outputs the signal of "DVD control" to the DVD video reconditioned engine 200, in order to control DVD video recovery.

[0179] <Premise> It is premised on the case where the DVD video reconditioned engine 200 carries out continuation playback of a chapter 1, a chapter 2, a chapter 3, and the chapter 4 (from the DVD videodisk 1), in this example. On the other hand, it is premised on the case where it consists of an ENAV content 1, an ENAV content 2, and an ENAV content 3, about the ENAV contents 30 (30W). In addition, the chapter which the provider of image contents creates is treated as a par TOOBU title (Part of TiTle; omitting PTT) within DVD video.

[0180] under the above-mentioned premise, in this example, the ENAV engine 300 reproduces the ENAV content 1 before playback of a chapter 1 (drawing 18 (a)), reproduces the ENAV content 2 synchronizing with playback of a chapter 1 and a chapter 2 (drawing 18 (b)), and reproduces the ENAV content 3 synchronizing with playback of a chapter 3 and a chapter 4 -- it is like (drawing 18 (c)).

[0181] That is, in this example, the ENAV content 1 has the event description jumped to the ENAV content 2 in initiation of a chapter 1 (t10 and t11 of drawing 19, t14 reference). Moreover, the ENAV content 2 has the event description jumped to the ENAV content 3 in initiation of a chapter 3 (t30 and t31 of drawing 19, t34 reference). However, the ENAV content 3 does not have event description.

[0182] On the other hand, the "DVD event" signal from the DVD video reconditioned engine 200 is held in an event / command handler 320 until it checks the ENAV event to which the ENAV interpreter 330 corresponds. Supposing the ENAV playback information in an ENAV content includes event description, the ENAV interpreter 330 will check this kind of event periodically (t15-t17 of drawing 19, t25 - t26 reference).

[0183] When the ENAV interpreter 330 checked an ENAV event, supposing the event was held in the event / command handler 320, the ENAV interpreter 330 will read the event as a "ENAV event." Then, the event in an event / command handler 320 is cleared by the ENAV interpreter 330 (deletion or elimination).

[0184] Drawing 19 is drawing explaining the case (case 1) where playback of the ENAV contents to which a DVD video reconditioned engine outputs the PTT event accompanied by a chapter number as a DVD event in the beginning of each chapter, and an ENAV engine corresponds is started.

[0185] <Case 1> In this case, the DVD video reconditioned engine 200 outputs an PTT event with a chapter number (PTT Event (1) - PTT Event (4)) as a DVD event in initiation (t10, t20, t30, t40, --) of each chapter. An event / command handler 320 will hold an event with a chapter number as an ENAV event, if this DVD event is received. Then, the ENAV interpreter 330 checks the number currently held in the ENAV event for PTT (chapter), and the event / command handler 320 (t11, t21, t31, --). If the checked number is "1" or "3", the ENAV engine 300 will start playback of the ENAV content (at the example of drawing 19, they are the ENAV content 2 and the ENAV content 3) corresponding to the number ("correspondence" here does not necessarily mean coincidence of a number) (t14, t34), and the (held at the event / command handler 320) event will be cleared.

[0186] In addition, although the case where playback of the ENAV content 2 is started by PTT Event (1), playback of the ENAV content 2 is continued by PTT Event (2), playback of the ENAV content 3 is started by PTT Event (3), and playback of the ENAV content 3 is continued by PTT Event (4) (playback of the ENAV content 4 is not started) is illustrated in drawing 19, this is an example on explanation to the last. How PTT Event (n) is answered and the ENAV content m is reproduced may occur [ various ].

[0187] Drawing 22 is a flow chart Fig. explaining the example of a DVD video reconditioned engine, event generation and a command / property processing section, and the ENAV interpretation section of operation corresponding to the case (case 1) of drawing 19.

[0188] In DVD video playr 100 of drawing 1 loaded with the DVD videodisk 1 of a configuration so that it may be illustrated by drawing 30 or drawing 31, the DVD video reconditioned engine 200 presupposes that playback of the chapter n (it is n= 1 at first) within a certain video title set (VTS) recorded on DVD video area was started (step ST 180). Then, the DVD video reconditioned engine 200 outputs an PTT event (1) to an event / command handler 320 at the head of [ t10 ] a chapter 1 (PTT Event(n) = PTT Event (1); step ST 182), and starts playback of a chapter 1 (step ST 184). In the meantime, the event / command handler 320 is standing by in the condition of the waiting for an event (no [ of steps ST192 and ST194 ]). Here, an PTT event (1) is one argument (argument) which described the chapter number "1."

[0189] The event / command handler 320 (event generation and a command / property processing section) which was standing by in the event waiting state (no [ of steps ST192 and ST194 ]) till then will hold the PTT event (ENAVPTT event) to which the chapter number "1" was attached as an ENAV event, if the above-mentioned PTT event (1) is received (yes of a step ST 194) (step ST 196). (No [ of a step ST 198 ]), an event / command handler 320 maintains this event maintenance condition, while the

ENAV interpreter 330 has not read the event.

[0190] Here, when the ENAVPTT event of a chapter number "1" is held in the event / command handler 320 (t11 of drawing 19), the ENAV interpreter 330 can read the event as an ENAV event (the step ST 216 mentioned later). When the ENAV interpreter 330 performs event reading (yes of a step ST 198), an event / command handler 320 clears the event currently held (step ST 200), and returns to the standby condition of the waiting for an event (step ST 202).

[0191] the time of on the other hand the ENAV interpreter (ENAV interpretation section) 330 reproducing a certain ENAV content m (for example, ENAV content m= 2 of drawing 19) -- (step ST210) -- the contents of event maintenance of an event / command handler 320 (the ENAV event and its chapter number for PTT) are checked periodically (for example, t15, t16 and t17 of drawing 19, --) (step ST 212). (No [ of a step ST 214 ]), when the event / command handler 320 does not hold the event at the time of this event check, a periodical event check is repeated as it is.

[0192] If the talk is returned to t10 of drawing 19, after the ENAV interpreter 330 reads an event (ENAVPTT event "1") (t11), the ENAV engine 300 will start playback of a corresponding ENAV content (here ENAV content 2) (t14-).

[0193] On the other hand, the DVD reconditioned engine 200 is continuing playback of a chapter 1 (n= 1) (no [ of a step ST 184 and a step ST 186 ]). Termination of playback of a chapter 1 (n= 1) starts playback of a chapter 2 (n+1=2) (step ST 188). (yes of a step ST 186) thereby -- processing of the DVD video reconditioned engine 200 -- (-- one increment of the chapter number n was carried out -- removing --) -- it returns to processing of a step ST 180.

[0194] The DVD reconditioned engine 200 is the beginning (t20 of drawing 19) of a chapter 2, and outputs an PTT event (2) (step ST 182). Then, the ENAV interpreter 330 reads the ENAVPTT event of a number "2" in an event / command handler 320 (t21; step ST 216). However, in this example, since the ENAV content 2 does not have description of an event at all about a chapter 2, the ENAV interpreter 330 disregards that event (ENAVPTT event of a number "2") (this is contained in processing of the no of a step ST 198).

[0195] The DVD reconditioned engine 200 is the beginning (t30 of drawing 19) of a chapter 3, and outputs an PTT event (3) (step ST 182). Then, the ENAV interpreter 330 reads the ENAVPTT event of a number "3" in an event / command handler 320 (t31; step ST 216). In this example, since the ENAV content 3 has description of an event about a chapter 3, the ENAV interpreter 330 starts playback of that event (ENAVPTT event of a number "3") (step ST 220).

[0196] The DVD reconditioned engine 200 is the beginning (t40 of drawing 19) of a chapter 4, and outputs an PTT event (4) (step ST 182). Then, an event / command handler 320 holds the ENAVPTT event of a number "4" (step ST 196). However, in this example, since the case where there is no description of an event in the ENAV content 3 is assumed, the ENAV interpreter 330 does not perform an event check (this is contained when processing of the ENAV interpreter 330 has stopped at the loop formation of the no of a step ST 214).

[0197] If holding the event on the event / command handler 320 at the time of an event check, speaking generally, (yes of a step ST 214), the event (ENAVPTT event to which the number "n" was attached) will be read (step ST 216). If there is no ENAV content "m+1" corresponding to an event (ENAVPTT event "n") in the ENAV contents 30 (and/or, 30W) at this time (no [ of a step ST 218 ]), it will return to an event check (step ST 212). In the meantime, the contents which the ENAV engine 300 reproduces serve as an ENAV content "m" in this example. On the other hand, if the ENAV content "m+1" is described by the script in ENAV playback information when an ENAVPTT event "n" is read (yes of a step ST 218), the ENAV content "m+1" will be reproduced (step ST 220).

[0198] Processing of drawing 22 can be summarized as follows. Namely, it sets to the processing which reproduces the record contents which contain the DVD video contents 10 and the ENAV contents 30 from the DVD videodisk 1 with the volume space based on DVD video specification. The DVD video contents 10 are gained among the record contents reproduced from the DVD videodisk 1 (step ST 180). The ENAV contents 30 are gained among the record contents reproduced from the DVD videodisk 1 (step ST 210). The contents of the gained ENAV contents 30 are performed according to the

predetermined event (step ST 182) corresponding to the contents of the gained DVD video contents 10 (steps ST194-ST220).

[0199] the ENAV engine 300 reproduces the ENAV contents 30 among the record contents of the DVD videodisk 1, and makes playback of the ENAV contents 30, and playback of the DVD video contents 10 cooperate here according to the contents of these ENAV contents 30 (broken-line arrow head of drawing 22) -- it is constituted like. the contents of the ENAV contents 30 interlock, cooperate or change synchronizing with change of the recovery status of the DVD video contents 10 in the volume space to which this ENAV engine 300 was based on said DVD video specification -- it is constituted like (if; expression with which change of the chapters 1-3 of DVD video is interlocked with in drawing 19 - drawing 21, and the ENAV contents 1-3 change is changed, it will be the synchronization with DVD video recovery and ENAV contents).

[0200] Drawing 20 is drawing explaining the case (case 2) where exchange of an event/status is performed between a DVD video reconditioned engine and an ENAV engine, and an ENAV engine reproduces ENAV contents based on the result of this exchange.

[0201] <Case 2> In this case, the DVD video reconditioned engine 200 outputs an PTT event to an event / command handler 320 in initiation (t10, t20, t30, t40) of each chapter. An event / command handler 320 holds this event as an ENAV event for PTT, after receiving an PTT event. The ENAV interpreter 330 checks this ENAV event (ENAVPTT event) held at the event / command handler 320. If the ENAV event is a corresponding (to then refreshable ENAV content) event, the ENAV interpreter 330 will read the event and will clear the (held at the event / command handler 320) event.

[0202] The ENAV interpreter 330 outputs the ENAV lead status as an ENAV command the appropriate back according to the publication in an ENAV (it corresponded to the event) content (t12, t22, t32). Then, in order to know the chapter number at the time of playback, an event / command handler 320 outputs the lead status as a DVD control signal (t12, t22, t32).

[0203] The DVD video reconditioned engine 200 will return a chapter number to an event / command handler 320 as the return status, if the above-mentioned DVD control signal is received (t13, t23, t33). Then, an event / command handler 320 returns the chapter number to which it came on the contrary to the ENAV interpreter 330 as the ENAV return status (t13, t23, t33).

[0204] In the example of drawing 20, if the chapter number in the ENAV return status is "1" or "3", the ENAV engine 300 will start playback of a corresponding ENAV content (the example of drawing 20 the ENAV content 2 or the ENAV content 3) (t14, t34). If the chapter number in the ENAV return status is not "1" or "3", the ENAV engine 300 will not start playback of other ENAV contents (in the example of drawing 20, if the ENAV content under present playback is "2", playback of the ENAV content 2 will be continued).

[0205] In addition, in the configuration of drawing 1, the DVD video reconditioned engine 200 can control playback of the DVD videodisk 1, and the DVD video recovery control section 220 constituted as follows can be included now. Namely, this DVD video recovery control section 220 While outputting the DVD event signal about the recovery status (a menu call, a title jump, chapter jump, etc.) of the DVD videodisk 1 to event generation and a command / property processing section 320 the property (the spoken language set as the player section --) of the DVD videodisk 1 It is constituted so that the DVD status signal about the contents of subimage title language, playback actuation (under playback, a halt, a halt, and a rapid traverse, already return middle class), and the disk etc. may be outputted to event generation and a command / property processing section 320.

[0206] Here, event generation and a command / property processing section 320 is constituted so that control of the image and the voice output section 350 using the ENAV playback information included in ENAV contents (30 or 30W) can be performed according to the DVD event signal (it is the PTT event of t10 at drawing 20) and/or DVD status signal (it is the return status of t13 at drawing 20) from the DVD video recovery control section 220.

[0207] Moreover, ENAV contents (30 or 30W) can contain the 2nd navigation contents (30W) gained from the exterior through the 1st navigation contents (30) and communication lines (Internet etc.) which were reproduced from the DVD videodisk 1.

[0208] In this case, control by the event generation and the command / property processing section 320 according to a DVD event signal and/or a DVD status signal can be performed also to any of control by said 1st and 2nd navigation contents (30 30W).

[0209] Moreover, a DVD event signal can be constituted so that it may be generated corresponding to the menu call which calls the menu recorded on the DVD videodisk 1, the title jump which switches the title reproduced from the DVD videodisk 1, or the chapter (PTT) jump which switches the chapter reproduced from the DVD videodisk 1.

[0210] Drawing 23 is a flow chart Fig. explaining the example of a DVD video reconditioned engine, event generation and a command / property processing section, and the ENAV interpretation section of operation corresponding to the case (case 2) of drawing 20.

[0211] In DVD video playr 100 of drawing 1 loaded with the DVD videodisk 1 of a configuration so that it may be illustrated by drawing 30 or drawing 31, the DVD video reconditioned engine 200 presupposes that playback of the chapter n (it is  $n=1$  at first) within a certain video title set (VTS) recorded on DVD video area was started (step ST 230). Then, the DVD video reconditioned engine 200 is the head t10 of a chapter 1, outputs an PTT event to an event / command handler 320 (step ST 232), and starts playback of a chapter 1 (step ST 234). In the meantime, the event / command handler 320 is standing by in the condition of the waiting for an event (no [ of steps ST252 and ST254 ]).

[0212] An event / command handler 320 will hold this PTT event as an ENAV event, if the above-mentioned PTT event is received (yes of a step ST 254) (step ST 256). In the meantime, the ENAV interpreter 330 is reproducing the ENAV content m (step ST 280).

[0213] The ENAV interpreter 330 is checking the ENAV event for PTT (ENAVPTT event) periodically during playback of the ENAV content m (although the illustration before t10 is omitted t15 and t16 of drawing 20, t17 grade; no [ of steps ST282 and ST284 ]). If an ENAVPTT event is held in an event / command handler 320 (yes of a step ST 284), the ENAV interpreter 330 will read the held ENAVPTT event as an ENAV event (t10-t11, t20-t21, t30 - t31 grade; step ST 286).

[0214] The event / command handler 320 is waiting for the ENAV interpreter 330 to read the held ENAVPTT event (no [ of a step ST 258 ]). If the ENAVPTT event by which the ENAV interpreter 330 was held is read (t11, t21, t31 grade; yes of a step ST 258), the event held in the event / command handler 320 will be cleared (step ST 260).

[0215] The ENAV interpreter 330 outputs the ENAV lead status as an ENAV command, after reading the above-mentioned ENAVPTT event (t12, t22, t32 grade; step ST 288).

[0216] The event / command handler 320 is waiting to output the ENAV command of the above-mentioned lead status from the ENAV interpreter 330 (no [ of a step ST 262 ]). An event / command handler 320 will output a lead status command as a DVD control signal, if the ENAV command of the lead status is received from the ENAV interpreter 330 (yes of a step ST 262) (t12, t22, t32 grade; step ST 264).

[0217] If a lead status command (DVD control signal) is received (yes of a step ST 236), according to the lead status command, the DVD video reconditioned engine 200 will read the chapter number n under current playback (here  $n=1$ ) (step ST 238), and will return a chapter number "1" as the return status to an event / command handler 320 (t13, t23, t33 grade; step ST 240). (No [ of a step ST 236 ]), in addition, when a lead status command has not been sent, processing of steps ST238 and ST240 is skipped.

[0218] An event / command handler 320 is waiting for the return status from the DVD video reconditioned engine 200, after outputting a lead status command (no [ of steps ST266 and ST268 ]). If the return status is sent from the DVD video reconditioned engine 200 (t13, t23, t33 grade; yes of a step ST 268), an event / command handler 320 will be returned to the ENAV interpreter 330 by making a chapter number "1" into the ENAV return status (here t13; the step ST 270), and it will go into the following event waiting state (step ST 272).

[0219] The ENAV interpreter 330 is waiting for the ENAV return status from an event / command handler 320, after outputting the ENAV lead status (no [ of steps ST290 and ST292 ]). If the ENAV return status is sent from an event / command handler 320 (t13, t23, t33 grade; yes of a step ST 292), the

DVD video reconditioned engine 200 will read the chapter number  $n$  under current regeneration (here  $n=1$ ) from the return status to which the ENAV interpreter 330 has been sent (here  $t13$ ; the step ST 294). And it is confirmed whether the ENAV interpreter 330 has the script of the ENAV content " $m+1$ " (when the ENAV content  $m$  under present playback is " $m=1$ ", " $m+1$ " is 2) corresponding to the event (ENAVPTT event) read into the ENAV playback information under present activation at a step ST 286 (step ST 296).

[0220] In the example of drawing 20, the ENAV content 1 under present playback shall have event description in the PTT events of a chapter 1 (yes of a step ST 296). By this event description, the ENAV engine 300 starts playback of the ENAV content 2 ( $t14$ ; step ST 298).

[0221] While, as for the DVD video reconditioned engine 200, the lead status is not outputted from an event / command handler 320 on the other hand (no [ of a step ST 236 ]), Or after the lead status is outputted from an event / command handler 320 (yes of a step ST 236), when outputting the return status to an event / command handler 320 (step ST 240) Processing of steps ST234-ST240 is continued until playback of the chapter  $n$  under current playback (it is  $n=1$  at first) is completed (no [ of a step ST 242 ]). If playback of the chapter  $n$  ( $=1$ ) is completed (yes of a step ST 236), the DVD video reconditioned engine 200 will start playback of the following chapter  $n+1$  ( $=2$ ) ( $t20$ ; step ST 244).

[0222] In the initiation  $t20$  of a chapter 2, the DVD video reconditioned engine 200 outputs an PTT event after playback termination of a chapter 1 (step ST 232). Then, an event / command handler 320 holds the PTT event as an ENAV event (step ST 256). Then, the ENAV interpreter 330 checks this ENAV event for PTT (step ST 282), reads it as an ENAV event ( $t21$ ; step ST 286), and clears the event held after that at the event / command handler 320 (step ST 260).

[0223] The ENAV interpreter 330 sends a command (ENAV lead status) to the DVD video reconditioned engine 200, in order to read a chapter number (under current playback) through the ENAV command and a DVD control signal ( $t22$ ; step ST 288). Then, the ENAV interpreter 330 reads a number "2" in the DVD video reconditioned engine 200 through a DVD status signal and an ENAV property ( $t23$ ; step ST 294). (it is the number of the chapter under current playback) When the ENAV content 2 does not include the event description to a chapter 2 here (no [ of a step ST 296 ]), the ENAV interpreter 330 continues playback of the ENAV content 2 ( $t23$ - $t34$ ). In the meantime, the DVD video reconditioned engine 200 is continuing playback of a chapter 2 ( $t20$ - $t30$ ).

[0224] In the initiation  $t20$  of a chapter 3, the DVD video reconditioned engine 200 outputs an PTT event after playback termination of a chapter 2 (step ST 232). Then, an event / command handler 320 holds the PTT event as an ENAV event (step ST 256). Then, the ENAV interpreter 330 checks this ENAV event for PTT (step ST 282), reads it as an ENAV event ( $t21$ ; step ST 286), and clears the event held after that at the event / command handler 320 (step ST 260).

[0225] The ENAV interpreter 330 sends a command (ENAV lead status) to the DVD video reconditioned engine 200, in order to read a chapter number (under current playback) through the ENAV command and a DVD control signal ( $t32$ ; step ST 288). Then, the ENAV interpreter 330 reads a number "3" in the DVD video reconditioned engine 200 through a DVD status signal and an ENAV property ( $t33$ ; step ST 294). (it is the number of the chapter under current playback) Here, since the ENAV content 2 includes the event description to a chapter 3, the ENAV interpreter 330 starts playback of the ENAV content 3 ( $t34$ ; step ST 298).

[0226] In the initiation  $t40$  of a chapter 4, the DVD-video reconditioned engine 200 outputs an PTT event after playback termination of a chapter 3 (step ST 232). Then, an event / command handler 320 holds the PTT event as an ENAV event (step ST 256). Here, if there is no event description into the ENAV content 3 (no [ of a step ST 284 ]), the ENAV interpreter 330 will not perform an event check (step ST 282) (or even if it checks on a format, processing which answered the check result is not performed). Consequently, an event / command handler 320 maintains the event maintenance (step ST 256) till then (no [ of a step ST 258 ]).

[0227] Processing of drawing 23 can be summarized as follows. Namely, it sets to the processing which reproduces the record contents which contain the DVD video contents 10 and the ENAV contents 30 from the DVD videodisk 1 with the volume space based on DVD video specification. The DVD video



contents 10 are gained among the record contents reproduced from the DVD videodisk 1 (step ST 230). The ENAV contents 30 are gained among the record contents reproduced from the DVD videodisk 1 (step ST 280). The contents of the gained ENAV contents 30 are performed according to the predetermined event (step ST 232) corresponding to the contents of the gained DVD video contents 10 (steps ST254-ST298).

[0228] the ENAV engine 300 reproduces the ENAV contents 30 among the record contents of the DVD videodisk 1, and makes playback of the ENAV contents 30, and playback of the DVD video contents 10 cooperate here according to the contents of these ENAV contents 30 (broken-line arrow head of drawing 23) -- it is constituted like. the contents of the ENAV contents 30 interlock, cooperate or change synchronizing with change of the recovery status of the DVD video contents 10 in the volume space to which this ENAV engine 300 was based on said DVD video specification -- it is constituted like (if; expression with which change of the chapters 1-3 of DVD video is interlocked with in drawing 19 - drawing 21, and the ENAV contents 1-3 change is changed, it will be the synchronization with DVD video recovery and ENAV contents).

[0229] Drawing 21 is drawing explaining the case (case 3) of the others which start playback of the ENAV contents to which a DVD video reconditioned engine outputs the PTT event accompanied by a chapter number as a DVD event in the beginning of each chapter, and an ENAV engine corresponds.

[0230] <Case 3> In this case, the ENAV interpreter 330 is outputting the enabling PTT number for PTT events to the event / command handler 320 in advance (t01 of drawing 21). It comes to be required that only a corresponding ENAVPTT event should be outputted by this (for enabling PTT number outputted in advance).

[0231] The DVD video reconditioned engine 200 outputs the PTT event accompanied by a chapter number as a DVD event signal in initiation (t10, t20, t30, t40) of each chapter. An event / command handler 320 confirms whether this DVD event signal for PTT is a thing to the chapter demanded (enabling PTT number outputted in advance). If this DVD event signal is required, an event / command handler 320 will hold the ENAVPTT event accompanied by that chapter number (t11, t31 grade). Otherwise, this DVD event signal for PTT is not held in an event / command handler 320.

[0232] The ENAV interpreter 330 checks the ENAV event held in the event / command handler 320 (t11, t15, t16, t17, --). When the checked ENAV event is a corresponding (for enabling PTT number outputted in advance) event (for example, check result of t11), the ENAV interpreter 330 reads the event (for example, ENAVPTT event to which the number "1" was attached), and clears the event currently held on the event / command handler 320 after an appropriate time. And the ENAV engine 300 starts playback of a corresponding ENAV content (the example of drawing 21 ENAV content 2) (t14).

[0233] In addition, selection of the PTT event as which it was required (place corresponding to the enabling PTT number outputted in advance) mentioned above can be performed to the DVD video reconditioned-engine 200 side. If it is made such, it can constitute so that "the demanded PTT event" may be sent only to an event / command handler 320 from the DVD video reconditioned engine 200.

[0234] Drawing 24 is a flow chart Fig. explaining the example of a DVD video reconditioned engine, event generation and a command / property processing section, and the ENAV interpretation section of operation corresponding to the case (case 3) of drawing 21.

[0235] In DVD video playr 100 of drawing 1 loaded with the DVD videodisk 1 of a configuration so that it may be illustrated by drawing 30 or drawing 31, the DVD video reconditioned engine 200 presupposes that playback of the chapter n (referred to as n= 1 at first) within a certain video title set (VTS) recorded on DVD video area was started (step ST 300). Then, the DVD video reconditioned engine 200 is the head t10 of a chapter 1, outputs an PTT event (n= 1) to an event / command handler 320 (step ST 302), and starts playback of a chapter 1 (step ST 304). This chapter playback is continued until playback of that chapter (n= 1) is completed. If playback of the chapter (n= 1) is completed (t20; yes of a step ST 306), playback of the following chapter (n+1=2) will be started (step ST 308).

[0236] In the meantime, the event / command handler 320 is standing by in the condition of the waiting for an event (no [ of steps ST312 and ST318 ]). Moreover, the ENAV interpreter 330 is waiting for description of an event demand to come out to the ENAV playback information in the ENAV content m



in the meantime, reproducing the ENAV content  $m$  (referred to as  $m=1$  at first) (no [ of a step ST 332 ]). (step ST 330)

[0237] When ENAV has description of an event demand (yes of a step ST 332), the ENAV interpreter 330 outputs the enabling PTT event accompanied by the enabling PTT number for PTT events "1" to an event / command handler 320 to suitable timing ( $t_{01}$ ; step ST 334). As for this timing, outputting in front is more desirable rather than the DVD video reconditioned engine 200 generates an PTT event (1). A demand of the event accompanied by this enabling PTT number holds this event demand (enabling PTT event (1)) in an event / command handler 320 (step ST 316). (yes of a step ST 314) And an event / command handler 320 stands by until an PTT event is sent from the DVD video reconditioned engine 200.

[0238] The DVD video reconditioned engine 200 outputs an PTT event (1) to an event / command handler 320 in the initiation  $t_{10}$  of a chapter 1 (step ST 302). Here, an PTT event (1) is one argument (argument) which described the chapter number "1."

[0239] Since it is the above "the demanded PTT event (enabling PTT event (1))" when the above-mentioned PTT event (1) is received (yes of a step ST 318) (yes of a step ST 320), an event / command handler 320 holds the PTT event accompanied by a chapter number "1" as an ENAV event (step ST 322).

[0240] The ENAV interpreter 330 checks the ENAV event and its chapter number for PTT (step ST 336). Since the event / command handler 320 holds the ENAVPTT event (1) of a chapter number "1" at this time (yes of a step ST 338), the ENAV interpreter 330 reads that event as an ENAV event (step ST 340). If an ENAVPTT event (1) is read into the ENAV interpreter 330 (yes of a step ST 324), an event / command handler 320 will clear the held event (step ST 326), and it will stand by in the condition of waiting for the following event (step ST 328).

[0241] If the ENAV interpreter 330 has an ENAV content ( $m+1=2$ ) corresponding to the read event (here ENAVPTT event (1)) in the ENAV playback information at that time when an ENAVPTT event (1) is read (step ST 340) (yes of a step ST 342), playback of the ENAV content 2-will be started ( $t_{14}$ ; step ST 344).

[0242] Similarly, the ENAV interpreter 330 outputs the enabling PTT number for PTT events "3" to an event / command handler 320 ( $t_{03}$ ; step ST 334).

[0243] In the initiation  $t_{20}$  of a chapter 2, the DVD video reconditioned engine 200 outputs an PTT event (2) to an event / command handler 320 after playback termination of a chapter 1 (yes of a step ST 306) (step ST 302). However, in this example, an event / command handler 320 does not hold that event (PTT event (2)) by that (no [ of a step ST 320 ]) as which the ENAV interpreter 330 is not demanding the ENAVPTT event of a chapter number "2."

[0244] After playback termination of a chapter 2 (yes of a step ST 306), in playback initiation ( $t_{30}$ ; step ST 308) of a chapter 3, if the DVD video reconditioned engine 200 outputs an PTT event (3) to an event / command handler 320 (step ST 302), an event / command handler 320 will hold the PTT event of a chapter number "3" (step ST 322). Then, the ENAV interpreter 330 checks the ENAV event for PTT, and its number (step ST 336). The ENAV interpreter 330 reads the (it checked) event as an ENAV event the appropriate back (step ST 340). The event held at the event / command handler 320 is cleared after this event reading (yes of a step ST 324) (step ST 326). And if the ENAV content (here ENAV content 3) corresponding to the read event is described by ENAV playback information (yes of a step ST 342), the ENAV engine 300 will start playback of the ENAV content 3 ( $t_{34}$ ; step ST 344).

[0245] In playback initiation ( $t_{40}$ ; step ST 308) of a chapter 4, the DVD video reconditioned engine 200 outputs an PTT event (4) to an event / command handler 320 after playback termination of a chapter 3 (yes of a step ST 306) (step ST 302). However, an event / command handler 320 does not hold the PTT event of a chapter number "4." That is, in this example, the ENAV interpreter 330 is from not demanding the ENAVPTT event of a chapter number "4" (no [ of a step ST 320 ]).

[0246] Processing of drawing 24 can be summarized as follows. Namely, it sets to the processing which reproduces the record contents which contain the DVD video contents 10 and the ENAV contents 30 from the DVD videodisk 1 with the volume space based on DVD video specification. The DVD video

contents 10 are gained among the record contents reproduced from the DVD videodisk 1 (step ST 300). The ENAV contents 30 are gained among the record contents reproduced from the DVD videodisk 1 (step ST 330). The contents of the gained ENAV contents 30 are performed according to the predetermined events (output of a step ST 302 etc.) corresponding to the contents of the gained DVD video contents 10 (steps ST314-ST344).

[0247] the ENAV engine 300 reproduces the ENAV contents 30 among the record contents of the DVD videodisk 1, and makes playback of the ENAV contents 30, and playback of the DVD video contents 10 cooperate here according to the contents of these ENAV contents 30 (broken-line arrow head of drawing 24) -- it is constituted like. the contents of the ENAV contents 30 interlock, cooperate or change synchronizing with change of the recovery status of the DVD video contents 10 in the volume space to which this ENAV engine 300 was based on said DVD video specification -- it is constituted like (if; expression with which change of the chapters 1-3 of DVD video is interlocked with in drawing 19 - drawing 21, and the ENAV contents 1-3 change is changed, it will be the synchronization with DVD video recovery and ENAV contents).

[0248] DVD video playr 100 of drawing 1 which has the function/configuration explained with reference to drawing 2 - drawing 24 can have the following modes of operation and display modes. That is, this player 100 has a video mode (a halt or event waiting state of the ENAV engine 300), and an interactive mode (operating status of the ENAV engine 300) about that actuation, and has full video modes (drawing 7 etc.), full navigation modes (drawing 8 etc.), and mixed modes (drawing 2, drawing 3, drawing 11, drawing 12, etc.) about that display.

[0249] And in a video mode, when the DVD video reconditioned engine 200 reproduces the DVD video contents 10 (for example, ST10-ST18 of drawing 6, or ST40-ST48 of drawing 10), a full video mode is used for displaying the playback image.

[0250] Moreover, in an interactive mode, when the ENAV engine 300 reproduces the ENAV contents 30 (and/or, 30W) (for example, ST20-ST36 of drawing 6), full navigation mode is used for displaying the playback image (ST34-ST36 of drawing 6).

[0251] Or in an interactive mode, when the DVD video reconditioned engine 200 reproduces the DVD video contents 10 and the ENAV engine 300 reproduces the ENAV contents 30 (and/or, 30W) (for example, ST50-ST66 of drawing 10), mixed mode is used for displaying the playback image of the DVD video contents 10, and the playback image of the ENAV contents 30 (and/or, 30W) (ST64-ST66 of drawing 10).

[0252] In said mixed mode, the contents of an image of the DVD video contents 10 and the contents of an image of the ENAV contents 30 (and/or, 30W) can be mixed, and can be displayed (drawing 2, drawing 3, drawing 11, drawing 12).

[0253] Furthermore, in an interactive mode, when the DVD video reconditioned engine 200 reproduces the DVD video contents 10 (for example, ST10-ST18 of drawing 6, or ST40-ST48 of drawing 10), a full video mode is used for displaying the playback image.

[0254] With the gestalt of 1 implementation of this invention, the new contents offer approach with which package mold media, such as DVD video, and the online mold media using the Internet etc. were united is realized. Especially this the "new contents offer approach" is related with the change of initiation / termination actuation contemporary (or linkage or cooperation) with off-line contents and online contents.

[0255] As a condition that off-line contents and online contents are displayed on a user interface (on a display screen), it roughly divides and there are the following three.

- [0256] (1) Offline mode displayed with the layout only for off-line contents;
- (2) Online mode displayed with the layout only for online contents;
- (3) Mixture mode displayed with both layout for mixture.

[0257] Furthermore, since a normal display condition and an abnormality display condition exist in each mode, a condition division is carried out as follows.

[0258] (1) At offline mode, it is [1-1] normal display.;

[1-2] Abnormality display -- When the data of off-line contents are not inputted for injustice or the fault

on a certain transmission.

[0259] (2) At online mode, it is [2-1] normal display.;

[2-2] Abnormality display -- When the data of online contents are not inputted for injustice or the fault on a certain transmission.

[0260] (3) In mixture mode, it is [3-1] normal display (a synchronization or coincidence display).;

[3-2] Abnormality display -- When the data of OFF or online contents are not inputted for injustice or the fault on a certain transmission.

[0261] Here, that off-line contents cannot display well is the case where it is said that the information currently written for example, to [1-2-2] disk which is not correctly loaded with [1-2-1] disk cannot read well by the reasons of a defect etc.

[0262] Moreover, that online contents cannot display well is the case where it is said that [2-2-2] on-line information used as [2-2-1] online (network connection is not made) cannot receive well by the reasons of communication failure etc.

[0263] In addition, the abnormalities at the time of mixture of off-line online are based on the combination of each cause.

[0264] Drawing 25 is drawing explaining the pass which can change among two or more modes (offline mode, online mode, mixture mode) in the system configuration of drawing 1. Here, transition between the modes is explained to be processing of the rereeling reel in each mode in offline mode, online mode, and mixture mode.

[0265] A user setup can perform actual transition in the pass which is illustrated to drawing 25 and which can be changed. For example, in offline mode M1, when the DVD videodisk 1 is discharged from the disk drive with which DVD video player 100 of drawing 1 is equipped and which is not illustrated (change-over event E02), it can change to online mode M2, and on-line information can be displayed. Or it is also possible to display the display information (onscreen display for setting up the own operational parameter of a player (omitting OSD) etc.) which the player 100 has in the interior independently of a disk 1 or a network (communication line) in offline mode M1.

[0266] When it is in online mode M2, it is possible to detect to have been loaded with the disk 1 (the change-over event E01 or E03), and to change in to change to offline mode M2 or the mixture mode M3. If such a mode transition function is made the invalid (user actuation through own OSD of a player etc.), when the above change-over events arise, it is possible to continue a display with online mode M2.

[0267] Generally, since the direction of the information read-out rate from the DVD videodisk 1 with which DVD video player 100 was loaded is a high speed from the exchange of the information on networks, such as the Internet, off-line contents playback (DVD video recovery) can raise the quality of a display image (in DVD video recovery, information read-out is possible at the rate of 10 or more Mbpses).

[0268] Although a display which is illustrated by drawing 2, drawing 3, drawing 11, or drawing 12 is possible in the interactive mode (M3) of drawing 25, the ENAV contents in that case can also be incorporated from a disk 1 to the Internet.

[0269] If it enables it to go between various modes back and forth freely like drawing 25, the charm of the whole contents can be heightened by combining off-line contents (DVD video contents 10) and the newest information (Web contents 30W) placed on the network. (There is a game of a network waging-war mold as an example with a charm of the whole contents increasing [ with the mixture mode M3 ].) For this reason, changing in the mixture mode M3 from online mode M2, when loaded with a disk 1 (change-over event E03) has a merit for a user. This is also the same as when changing in the mixture mode M3 by network connection (change-over event E05) from offline mode M1. On the contrary, when the disk 1 has been discharged in the mixture mode M3 (change-over event E04), changing to online mode M2 is also possible, and it is also possible to continue processing in the manipulation routine decided in the mixture mode M3. Moreover, when it is in the mixture mode M3 and the network has been turned off (change-over event E06), it is also possible to return to offline mode M1 automatically.

[0270] The above-mentioned mode transition can also perform as a demand of a user following the approach (for example, shift Ruhr 1 of drawing 29 mentioned later) beforehand decided by the player 100.

[0271] In addition, since the above-mentioned mode transition takes a certain amount of time amount, there is a problem whether what we do with a screen display in the meantime. Here, it is performing the following processings and the above-mentioned problem can be coped with until the screen display of a transition place is ready, in case each mode transition is performed. That is, a still picture (it goes into Video RAM which is not illustrated in the image output-control section 352 of drawing 1) frieze is carried out in front of transition of the image (it does not ask whether it is an animation or it is a still picture) currently displayed on the screen till then, and it indicates by the screen. And if the screen display of a transition place is ready, it will switch to the screen display image of a transition place seamlessly from the frieze image (still picture) by which it was indicated till then by the screen. Or the blue back image (the OSD image of a player may be included suitably) is indicated by the screen until the screen display of a transition place is ready, in case each mode transition is performed. And if the screen display of a transition place is ready, it will switch to the screen display image of a transition place from the blue back image by which it was indicated till then by the screen.

[0272] Drawing 26 is a flow chart Fig. explaining an example of which [ of two or more modes shown in drawing 25 ] is set up first. Processing of this flow chart can be written in the program ROM which is not illustrated as an initialization program (a part of firmware) of DVD video playr 100 of drawing 1. A user's push of the setup menu button (not shown) of the remote control which is not illustrated, for example displays a mode selection menu for example, on an onscreen display (OSD) on the display screen of the external monitor TV (not shown) connected to the image output-control section 352 (step ST 400).

[0273] Although not illustrated on this mode selection menu, the selection carbon button of offline mode M1, the selection carbon button of online mode M2, the selection carbon button in the mixture mode M3, and the decision carbon button are arranged. If the selection carbon button of either offline mode M1, online mode M2 or the mixture mode M3 is chosen by actuation of the cursor of the remote control which a user does not illustrate, and a decision key and a decision key is pressed (yes of a step ST 410), the selected mode (for example, mixture mode M3) will be set as the player 100 of drawing 1 (step ST 420). (No [ of a step ST 410 ]), for example, when offline mode M1 is made into the default mode and a user makes neither of the selections, a default mode (this example offline mode M1) is set as the player 100 of drawing 1 (step ST 430). If mode setting (step ST 500) ends by the own alternative or default selection, processing of drawing 26 is ended and the player 100 of drawing 1 will be in the condition (step ST 440) that it can operate in the set-up mode.

[0274] Drawing 27 is a flow chart Fig. explaining an example of the contents of processing in the present mode (the default mode or user selection mode set up at the step ST 500 of drawing 26) in either of two or more modes shown in drawing 25. Processing of this flow chart can also be written in the program ROM which is not illustrated as an initialization program of DVD video playr 100 of drawing 1.

[0275] First, it is confirmed whether the mode (M1, M2, or M3) set up by mode setting processing (step ST 500) of drawing 26 can process in the present mode (step ST 510). The processing will be performed if it is the processings (for example, the usual DVD videodisk playback in online mode / interactive mode M2 etc.) which can be processed (yes of a step ST 510) (step ST 520). The processing program of drawing 27 is carrying out status checks (the connection condition of communication lines, such as a loading condition of a disk 1, playback operating state of a disk 1, and the Internet, change-over existence between the mode M1 - M3, etc.) during the processing (step ST 530). For example, if the user did remote control actuation switched to the mode M3 from the mode M2, the mode change-over is performed (step ST 540). Or if the user changed the chapter of the DVD video work under present playback, while performing a chapter change-over corresponding to the user event, ENAV content playback as shown, for example at steps ST194-ST220 of drawing 22 can be switched (step ST 540).

[0276] (No [ of a step ST 510 ]), when it cannot process in the current mode, it goes into exception

processing (step ST 550). For example, when the playback initiation carbon button of the remote control which a user does not illustrate in the mode M2 is pushed and the disk tray (not shown) of a player 100 is not closed, processing which shuts a disk tray is performed (no [ of a step ST 550 and a step ST 560 ]), and it moves to the condition (yes of a step ST 510) which can usually be processed in the present mode M2. (No [ of a step ST 510 ]), when a big blemish is in the disk 1 with which the disk tray was loaded and the lead-in groove area, volume / file structure information area, or management information (VMG of drawing 30 etc.) cannot be read, since the exception-processing limitation is crossed (yes of a step ST 560), the system of a player 100 is terminated abnormally (step ST 570).

[0277] Although the above is explanation in online mode / interactive mode M2, the same of the flow of processing of drawing 27 is [ each mode of drawing 27 ] said of offline mode / video mode M1, or the mixture mode / interactive mode M3 (the contents of processing only differ). For example, when the connection partner on a network has cut communication link connection in the mode M3 (this is understood with the check of a step ST 530), it is terminated abnormally (step ST 570).

[0278] Drawing 28 is a flow chart Fig. explaining the contents of the status check in processing of drawing 27 (step ST 530). Here, it reaches [ whether the DVD disk 1 is inserted in DVD video player 100, and ], and the example of processing in the case of changing automatically in the different mode from current according to whether the Internet connectivity section (400W, 400W\*) is connected to the Internet etc. is explained. Processing of this flow chart can also be written in the program ROM which is not illustrated as an initialization program of DVD video player 100 of drawing 1.

[0279] If this status check processing (step ST 530) is started, the loading condition of a disk 1 will be checked first (step ST 532). [ whether on this check, the disk tray of the disk drive which is not illustrated is open, and ] [ whether if it has closed, the disk is correctly set to the disk tray, and ] A \*\*\*\*\* [ that the disk is a disk / in a player 100 / which can be read if the disk is set correctly ] (whether it is a disk according to DVD specification) Or even if it is a disk according to that it is the disk of DVD substandard, and DVD specification, the check whether a blemish, curvature, a crack, etc. are the existing bad disks can be included.

[0280] If the unrestorable problem of disk reading impossible etc. is discovered in this check, it will be terminated abnormally (the step ST 570 of drawing 27), but if it is a restorable defect (the disk tray has not closed although the normal disk 1 is set), after carrying out that processing (the step ST 550 of drawing 27), it will return to status check processing (step ST 530).

[0281] If the loading status check of a disk 1 ends, the connection condition of communication lines, such as the Internet, will be checked (step ST 534). The check (connection/cutting check of a network) whether it connects with the communication link modem which the Internet connectivity section (400W, 400W\*) of drawing 1 does not illustrate physically, logically, and normally, whether there are any abnormalities of operation in the hardware of a modem or the software of TCP/IP, and whether the network connection with a communications partner is established can be included in this check.

[0282] If the unrestorable problem of a poor communication link modem is discovered in this check, it will be terminated abnormally (the step ST 570 of drawing 27). On the other hand, if it is restorable temporary problems (the modem power source was turned on behind time after that although the power source of a modem with outside was off at the time of a check), since it processes connecting a modem to the Internet connectivity section of drawing 1 logically etc. (the step ST 550 of drawing 27), it will return to status check processing (step ST 530).

[0283] If the loading status check (step ST 532) of a disk 1 and the check (step ST 534) of a network connection condition end, based on the predetermined shift Ruhr, the transition place in the mode will be determined from the check result (it corresponds to either of the change-over events E01-E06 of drawing 25) (step ST 536). And after storing temporarily in the memory which does not illustrate the check result of the loading condition (step ST 532) of a disk 1, and a network connection condition (step ST 534), it jumps to processing (the contents of processing are drawing 27) in the determined mode (step ST 538).

[0284] In addition, the mode transition by the jump of a step ST 538 can also perform as a demand of a user following the approach (shift Ruhr) beforehand decided by the system side of a player 100. As an

approach of performing as a demand of a user, the menu button of the remote control which is not illustrated, for example is pushed, mode selection processing (step ST 400) of drawing 26 is started, and there are some which shift to the mode in which a user wishes at the step ST 420 in it. There is the following to, follow the approach (shift Ruhr) beforehand decided by the system side of a player 100 on the other hand.

[0285] drawing 29 -- the mode transition first thing to do in processing of drawing 28 -- it is drawing explaining an example of the shift Ruhr (shift Ruhr 1) referred to in a law. Here, the case where the modes which can shift mutually are the modes M1-M3 shown in drawing 25 is assumed. That is, as the current mode, there are M1, M2, or M3, there is a change-over event of a proper to each mode, and it has become the Ruhr where the mode of a transition place is determined according to the change-over event.

[0286] If there is specifically a change-over event E02 (disk discharge) when the present mode is offline mode (video mode) M1, changing to online mode (interactive mode) M2 will be specified, and if there is a change-over event E05 (network connection), changing in the mixture mode (interactive mode) M3 will be specified. When two change-over events E02 and E05 arise in coincidence, priority is given to the change-over event E05 (network connection) in this example (a priority is  $E05 > E02$ ). In addition, when the change-over event E02 arises previously rather than the change-over event E05 irrespective of this priority, transition to the mode corresponding to the event produced previously is performed (mode transition corresponding to the event produced afterwards is performed after that).

[0287] Moreover, if there is a change-over event E01 (disk insertion / loading) when the present mode is online mode (interactive mode) M2, changing to offline mode (video mode) M1 will be specified, and if there is a change-over event E03 (disk insertion / loading), changing in the mixture mode (interactive mode) M3 will be specified. Although two change-over events E01 and E03 are the change-over triggers produced by the same cause (disk insertion / loading), priority is given to the change-over event E03 in this example (a priority is  $E03 > E01$ ). this priority -- a user setup -- reverse (a priority is  $E03 < E01$ ) -- setting modification -- things are made. Or one side of the change-over events E01 and E03 can also be beforehand set as an invalid.

[0288] In addition, in the step ST 420 of drawing 26, there is also an approach a user chooses the mode M1 to change from the mode M2 to the mode M1 by change-over trigger called disk insertion / loading. At this time, this own alternative gives the priority higher than the shift Ruhr 1 of drawing 29.

[0289] If similarly there is a change-over event E06 (network cutting) when the present mode is the mixture mode (interactive mode) M3, changing to offline mode (video mode) M1 will be specified, and if there is a change-over event E04 (disk discharge), changing to online mode (interactive mode) M2 will be specified. When two change-over events E06 and E04 arise in coincidence, priority is given to the change-over event E06 (network cutting) in this example (a priority is  $E06 > E04$ ). In addition, when the change-over event E04 arises previously rather than the change-over event E06 irrespective of this priority, transition to the mode corresponding to the event produced previously is performed (mode transition corresponding to the event produced afterwards is performed after that).

[0290] Although drawing 29 is an example of the shift Ruhr 1 in the case of carrying out mode transition from a certain mode automatically to another mode, there may be two or more kinds of shift Ruhr used in this case. For example, it is also possible to apply the 2nd shift Ruhr ""event which system generates at time of abnormality situation generating" > "user event "> "an ENAV event"" as the shift Ruhr 2 suitably used together with the shift Ruhr 1 of drawing 29.

[0291] The computer virus may have been discovered when downloading Web contents from the Internet, when an error occurs during the system program activation which manages control of actuation of the whole equipment of drawing 1 as an example at the time of the above-mentioned abnormality situation generating here.

[0292] It is as follows when relation with DVD video playr 100 explained by the above-mentioned mode transition and drawing 1 is summarized. That is, the ENAV engine 300 of drawing 1 has the 1st interface (400,400\*) which receives the ENAV contents 30 from the DVD videodisk 1 with the volume space based on DVD video specification, and the 2nd interface (400W, 400W\*) which obtains another

ENAV contents (Web contents 30W) from a communication line (Internet).

[0293] DVD video playr 100 is loaded with the DVD videodisk 1 here. The condition that the 2nd interface (400W, 400W\*) is separated from said communication line (network cutting) is made into offline mode M1. The DVD videodisk 1 is discharged from DVD video playr 100, and it is said 2nd interface (400W). The condition that 400W\* is separated from said communication line (network cutting) is made into online mode M2. When the condition that DVD video playr 100 is loaded with the DVD videodisk 1, and said 2nd interface (400W, 400W\*) is connected to said communication line (network connection) is made into the mixture mode M3. If a change-over trigger (the trigger by insertion / discharge of a disk, or connection/cutting of a network; it corresponds to the change-over events E01-E06) starts (Following the predetermined shift Ruhr which is illustrated by drawing 29) Mode transition is automatically performed between offline mode M1, online mode M2, and the mixture mode M3.

[0294] In addition, this invention is not limited to the gestalt of each above-mentioned implementation, and deformation and modification various in the range which does not deviate from that summary are possible for it in the phase of that operation. Moreover, the gestalt of each operation is combined as suitably as possible, and may be carried out, and the effectiveness by combination is acquired in that case.

[0295] For example, the ENAV engine of this invention can be incorporated, without breaking down the compatibility of that system into the DVD video system (authentic Hi-Vision system using the semi- Hi-Vision system or 405nm laser using 650nm laser) corresponding to the Hi-Vision realized in the near future.

[0296] Moreover, the player function of drawing 1 is also realizable with software in a DVD disk drive and the personal computer equipped with high-speed CPU/MPU. That is, the DVD player 100 which is equivalent to drawing 1 on a high performance personal computer can be made virtually (the virtual DVD player on such a personal computer is realized in the personal computer marketed now or some game machines). In this case, this invention uses hardware called the existing personal computer, and may be carried out by being the form of the new software installed there.

[0297] Furthermore, invention of various phases is included in the gestalt of the above-mentioned implementation, and various invention may be extracted by the proper combination in two or more requirements for a configuration indicated by this application. For example, even if 1 or two or more requirements for a configuration are deleted from all the requirements for a configuration shown in the gestalt of operation, when at least one of this effect of the invention or the effectiveness accompanying implementation of this invention is obtained, the configuration from which this requirement for a configuration was deleted may be extracted as invention.

[0298] It considers as the structure which makes possible video recovery which was more rich in variety, maintaining compatibility with the DVD video specification of <main point conclusion <01> of gestalt of operation> existing, and the ENAV contents 30 are recorded on the disk 1 including the configuration according to the existing DVD video specification. Although it does not need to be reproducible in the DVD video playr according to the existing DVD video specification, these ENAV contents 30 consist of DVD video plays 100 concerning implementation of this invention so that it can reproduce (refer to drawing 30 and the operation gestalt of drawing 31).

[0299] <02> It enables it to use ENAV contents (Web contents) 30W [ same ] from communication lines, such as the Internet, in DVD video playr 100 concerning implementation of this invention in addition to ENAV contents 30 recorded on the disk 1 (refer to the operation gestalt of drawing 1).

[0300] According to a predetermined procedure (ENAV playback information described in the markup or the script), AV information included in the DVD video contents 10 recorded on the <03> disk 1 and AV information included in the ENAV contents 30 (and/or, ENAV contents 30W) interlock, or cooperates synchronizing with mutual, and it enables it to reproduce it (refer to the operation gestalt of drawing 2 - drawing 24).

[0301] So that playback of <04> DVD video contents 10 and/or playback of the ENAV contents 30 (Web contents 30W) can be switched free Offline mode M1 (mode which plays DVD video as it is),

Online mode M2 (mode which carries out video recovery which increased interactive nature through the communication link by the Internet etc.), It enables it to use suitably the mode (mode which can also perform high playback of the interactive nature using the Internet etc., carrying out DVD video recovery) M3 with which online mode and offline mode were intermingled (refer to the operation gestalt of drawing 25 - drawing 28).

[0302] It enables it to perform mode transition automatically according to the predetermined Ruhr between the <12> online mode M1, offline mode M2, and two or more modes of mixture mode M3 grade (refer to the operation gestalt of drawing 29).

[0303] <13> In DVD video playr 100 concerning implementation of this invention, event generation and a command / property processing section 320 receives a DVD event signal and/or a DVD status signal from the DVD video recovery control section 220, and operates. For this reason, unlike the configuration which sends a DVD control signal to a control section 220, the ENAV control according to playback (an event/status) of a DVD disk is attained from the processing section 320 (refer to drawing 1 and the operation gestalt of drawing 20).

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[Translation done.]



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3. In the drawings, any words are not translated.

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**DESCRIPTION OF DRAWINGS**

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**[Brief Description of the Drawings]**

**[Drawing 1]** Drawing explaining the example of a configuration of "the DVD video player with which the en HANSUDO navigation system (ENAV system) was incorporated" concerning the gestalt of 1 implementation of this invention.

**[Drawing 2]** Drawing explaining the example of a display in case the multi-framing output of the playback image by the side of DVD video contents and the playback image by the side of ENAV contents is carried out in the configuration of drawing 1.

**[Drawing 3]** Drawing explaining the example of a display in case the multi-window (overlapping window) output of the playback image by the side of DVD video contents and the playback image by the side of ENAV contents is carried out in the configuration of drawing 1.

**[Drawing 4]** Drawing explaining the example in the case of being compounded [ voice / by the side of ENAV contents / the playback voice by the side of DVD video contents, and / playback ] in the configuration of drawing 1 (mixing).

**[Drawing 5]** Drawing explaining the example of how a DVD video recovery output (DVD video menu) and an ENAV playback output (ENAV menu) change with internal commands.

**[Drawing 6]** The flow chart Fig. which explains the example of processing of a DVD video reconditioned engine, and processing of an ENAV engine about the menu call by the command.

**[Drawing 7]** Drawing explaining the example of a menu display by the side of video contents (full video mode).

**[Drawing 8]** Drawing explaining the example of a menu display by the side of ENAV contents (full ENAV mode).

**[Drawing 9]** Drawing explaining the example of how a DVD video recovery output (DVD video chapter playback) and an ENAV playback output (ENAV contents playback) change with internal commands.

**[Drawing 10]** The flow chart Fig. which explains the example of processing of a DVD video reconditioned engine, and processing of an ENAV engine about chapter playback.

**[Drawing 11]** Drawing explaining the example of a display of the synthetic menu of video contents and ENAV contents (MIKUSUDO frame mode).

**[Drawing 12]** Drawing explaining the example of a display of the synthetic image of video contents and ENAV contents (MIKUSUDO frame mode).

**[Drawing 13]** Drawing explaining the example of how a DVD video recovery output (DVD video menu) and an ENAV playback output (ENAV menu) change with user actuation (user event).

**[Drawing 14]** The flow chart Fig. which explains the example of processing of a DVD video reconditioned engine, and processing of an ENAV engine about the menu call by the user.

**[Drawing 15]** Drawing explaining the example of how a DVD video recovery output (a DVD video menu or playback pause) and an ENAV playback output (ENAV menu) change with user actuation (user event).

**[Drawing 16]** The flow chart Fig. which explains the example (first half) of processing of a DVD video reconditioned engine, and processing of an ENAV engine about the menu call or playback pause by the

user.

[Drawing 17] The flow chart Fig. which explains the example (second half) of processing of a DVD video reconditioned engine, and processing of an ENAV engine about the menu call or playback pause by the user.

[Drawing 18] Drawing explaining the case where reproduce the ENAV content 1 before chapter 1 playback when a DVD video reconditioned engine carries out continuation playback of the chapters 1-4, and the ENAV content 2 is reproduced synchronizing with playback of a chapter 1 and a chapter 2.

[Drawing 19] Drawing explaining the case (case 1) where playback of the ENAV contents to which a DVD video reconditioned engine outputs the PTT event accompanied by a chapter number as a DVD event in the beginning of each chapter, and an ENAV engine corresponds is started.

[Drawing 20] Drawing explaining the case (case 2) where exchange of an event/status is performed between a DVD video reconditioned engine and an ENAV engine, and an ENAV engine reproduces ENAV contents based on the result of this exchange.

[Drawing 21] Drawing explaining the case (case 3) of the others which start playback of the ENAV contents to which a DVD video reconditioned engine outputs the PTT event accompanied by a chapter number as a DVD event in the beginning of each chapter, and an ENAV engine corresponds.

[Drawing 22] The flow chart Fig. explaining the example of a DVD video reconditioned engine, event generation and a command / property processing section, and the ENAV interpretation section of operation corresponding to the case (case 1) of drawing 19.

[Drawing 23] The flow chart Fig. explaining the example of a DVD video reconditioned engine, event generation and a command / property processing section, and the ENAV interpretation section of operation corresponding to the case (case 2) of drawing 20.

[Drawing 24] The flow chart Fig. explaining the example of a DVD video reconditioned engine, event generation and a command / property processing section, and the ENAV interpretation section of operation corresponding to the case (case 3) of drawing 21.

[Drawing 25] Drawing which explains the pass which can change among two or more modes (offline mode, online mode, mixture mode) in the system configuration of drawing 1.

[Drawing 26] The flow chart Fig. explaining an example of which [ of two or more modes shown in drawing 25 ] is set up first.

[Drawing 27] The flow chart Fig. which explains an example of the contents of processing in the present mode in either of two or more modes shown in drawing 25.

[Drawing 28] The flow chart Fig. explaining the example of processing in the case of changing automatically in the different mode from the present according to whether reach [ whether the DVD disk is inserted in the DVD video playr, and ] in the status check in processing of drawing 27, and the Internet connectivity section is connected to the Internet.

[Drawing 29] the mode transition first thing to do in processing of drawing 28 -- drawing explaining an example of the shift Ruhr referred to in a law.

[Drawing 30] Drawing which is a refreshable DVD videodisk in the DVD video playr of drawing 1, and explains an example in case the ENAV contents 30 are stored in addition to DVD video area.

[Drawing 31] Drawing which is a refreshable DVD videodisk in the DVD video playr of drawing 1, and explains an example in case the ENAV contents 30 are stored in DVD video area.

[Drawing 32] Drawing explaining an example of what an image output becomes based on the layout control signal of drawing 1.

[Drawing 33] Drawing explaining an example of what a voice output result becomes based on the layout control signal of drawing 1.

[Description of Notations]

1 -- En HANSUDO DVD videodisk (it has the structure which is compatible with the conventional DVD videodisk) Disk; 10 -- DVD video contents on which the ENAV contents in which playback/processing is possible were recorded by the DVD player of drawing 1 which furthermore serves as a high order version conventionally, in view of a DVD player (DVD disk section); 30 -- En HANSUDO navigation contents ; (ENAV contents recorded on the DVD videodisk) 30, 30A-30C -- En

HANSUDO navigation contents (the Internet is minded) ENAV distributed -- contents / Web contents; 40 -- user actuation (user control unit); 100 -- the decoder section (the animation decoder by which MPEG encoding was carried out --) of a DVD video player; 200 -- DVD video reconditioned-engine; 210 -- DVD video player A compression voice decoder, Subimage decoder etc.; 220 -- DVD video recovery control section (Microcomputer); -- 300 -- en HANSUDO navigation engine (ENAV engine); -- 310 -- user event control-section (microcomputer); -- 320 -- event generation and a command / property processing section (microcomputer); -- the 330 -- ENAV interpretation section (Language interpretation section: Microcomputer); -- a 340 -- element decoder (the voice contained in ENAV contents --) decoder [, such as a still picture, a text, and an animation, ]; -- the 350 -- image and voice output section; 352 -- image output-control section (a digital image mixer --) Image DAC etc.; 354 -- Voice output control-sections (digitized voice mixer, voice DAC, etc.); 400, 400\* -- Interface; 400W with which an ENAV engine receives ENAV contents from a DVD disk, 400W\* -- Interface whose ENAV engine receives ENAV contents (Web contents) from the Internet.

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[Translation done.]

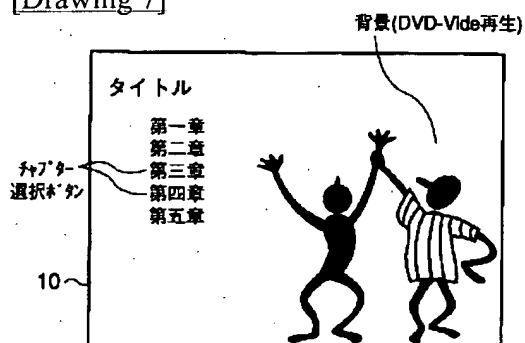
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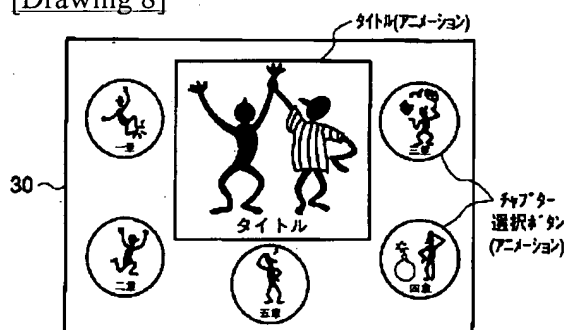
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## DRAWINGS

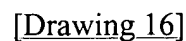
[Drawing 7]

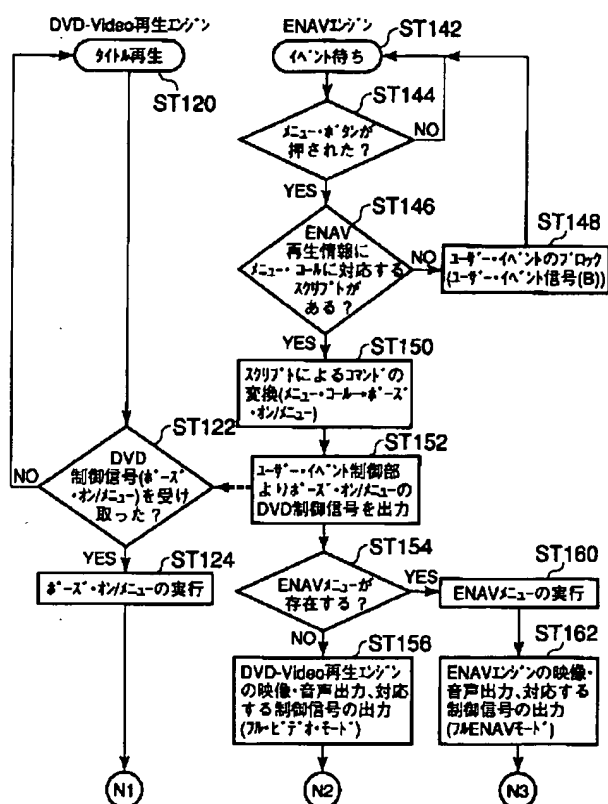


[Drawing 8]

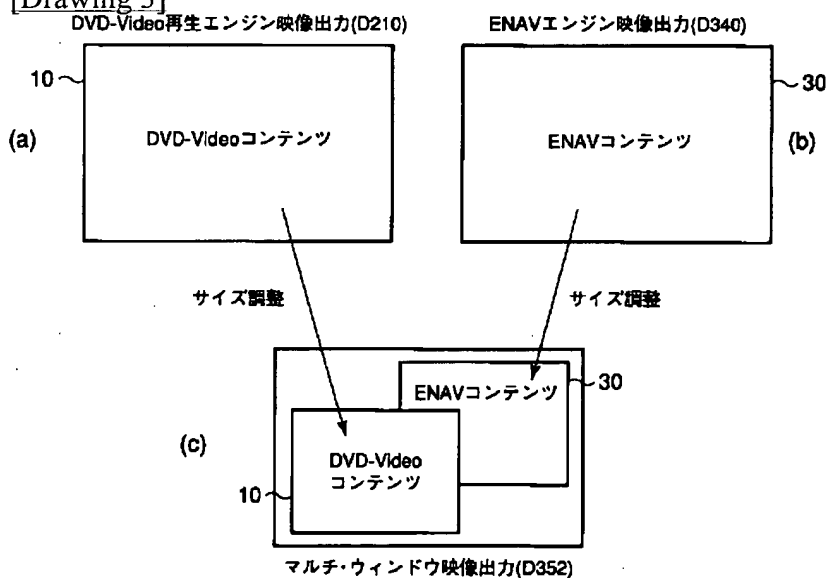


[Drawing 1]

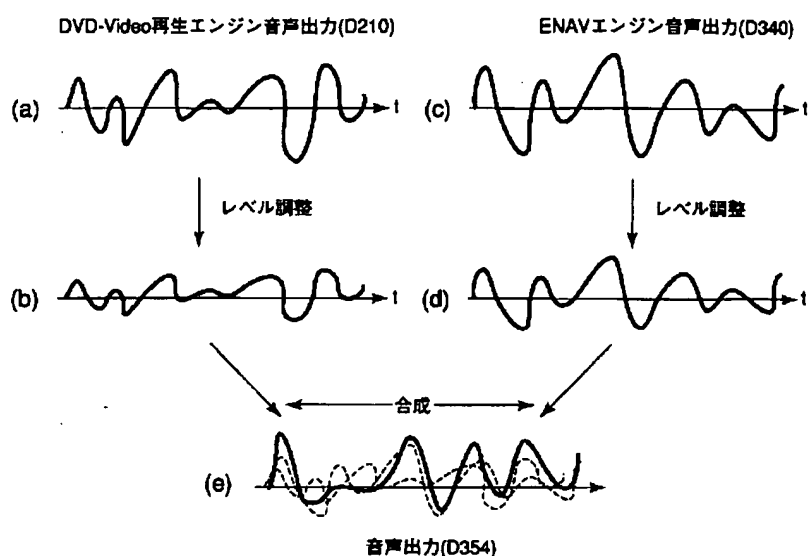




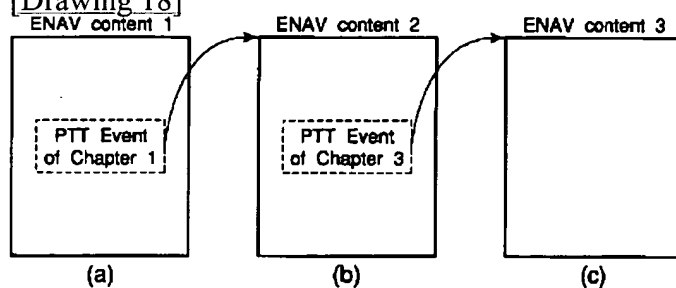
[Drawing 3]



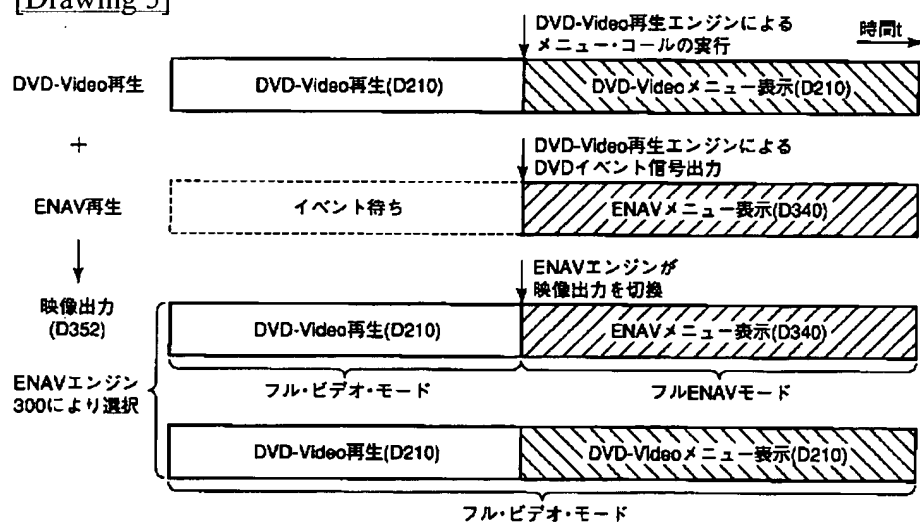
[Drawing 4]



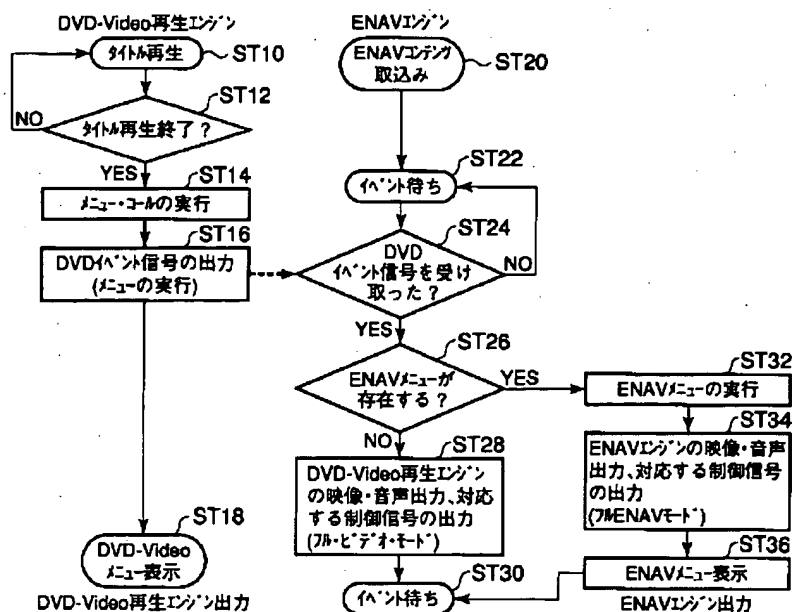
[Drawing 18]



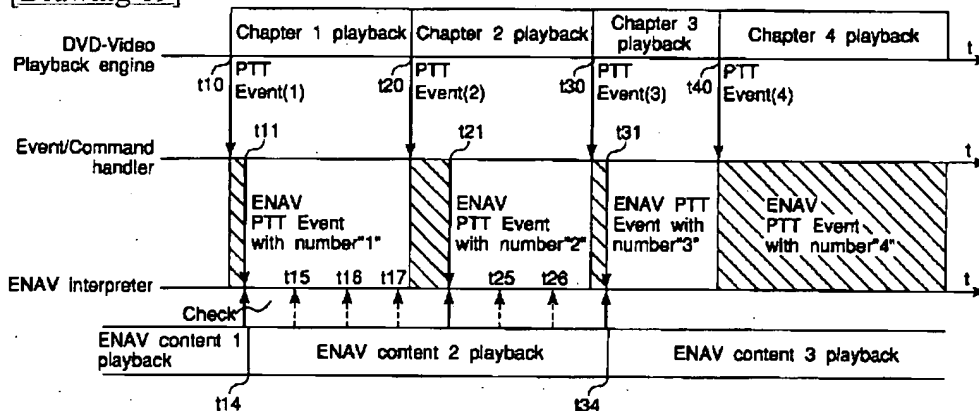
[Drawing 5]



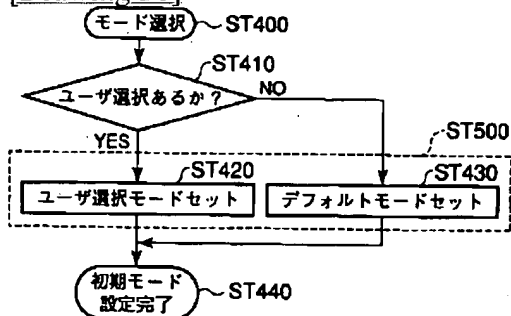
[Drawing 6]



[Drawing 19]

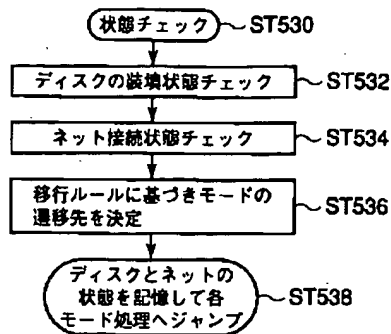


[Drawing 26]

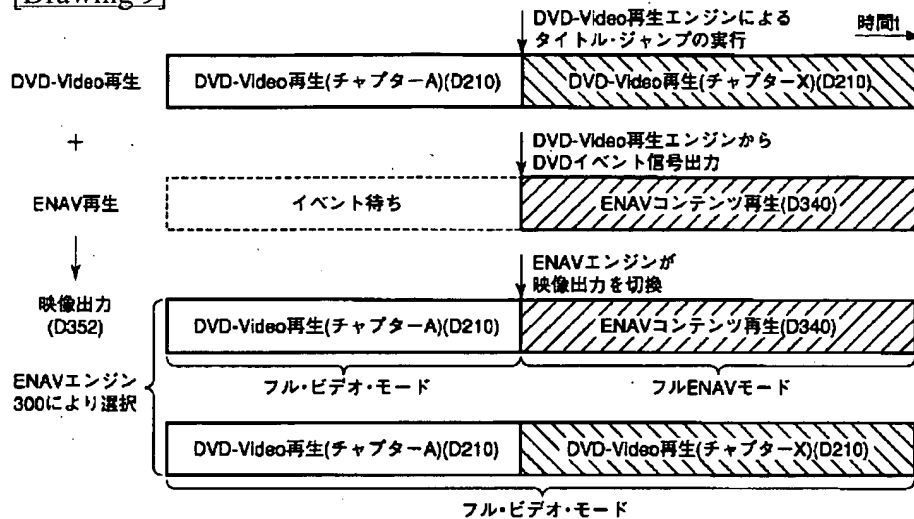


[Drawing 28]

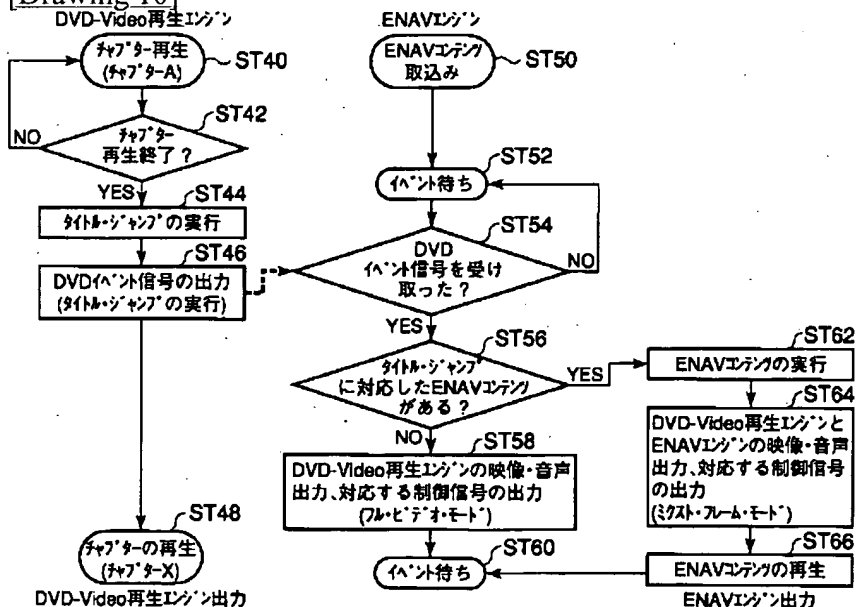




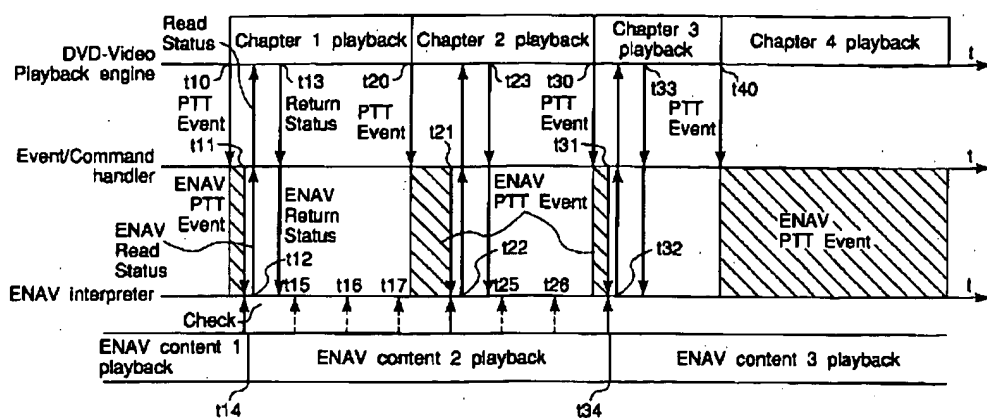
[Drawing 9]



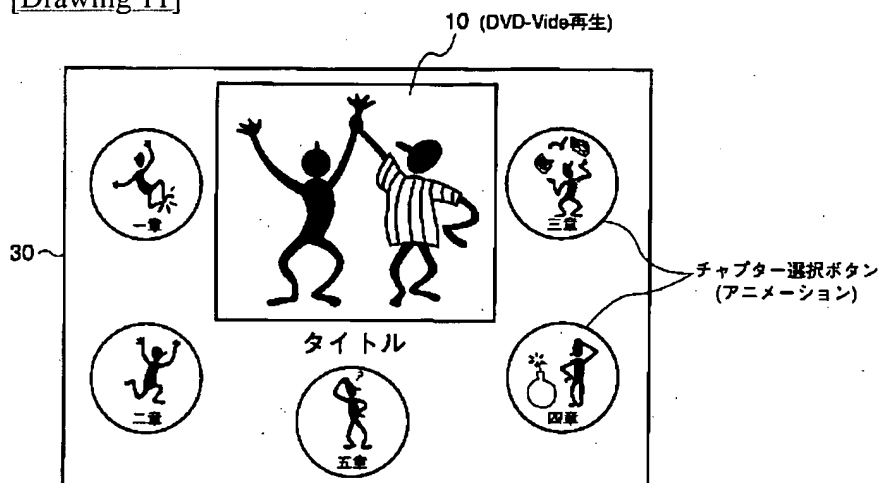
[Drawing 10]



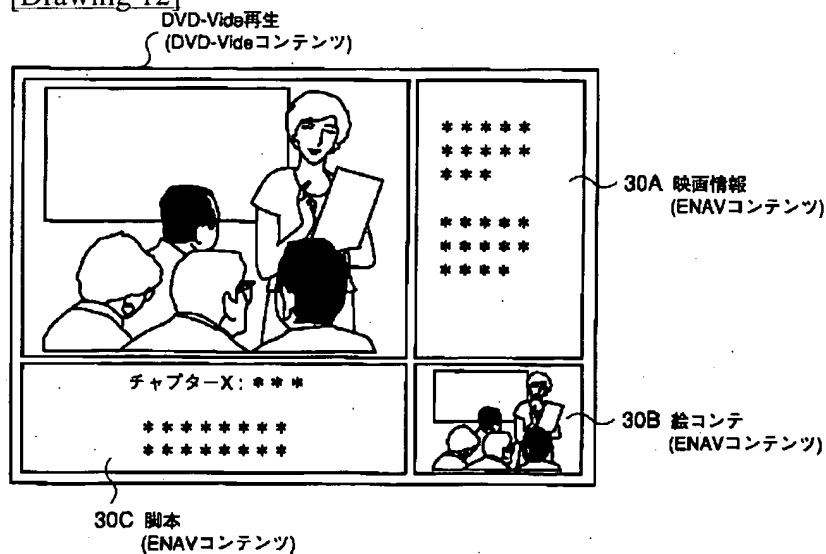
[Drawing 20]



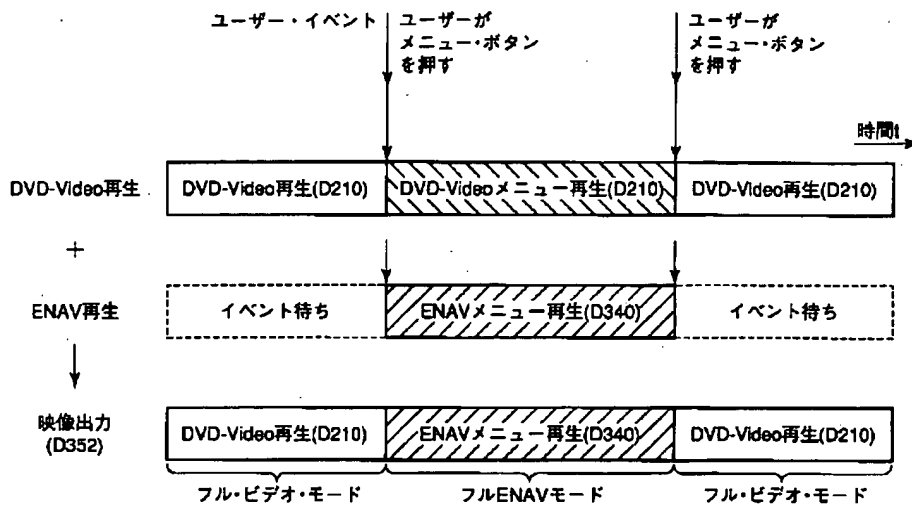
[Drawing 11]



[Drawing 12]



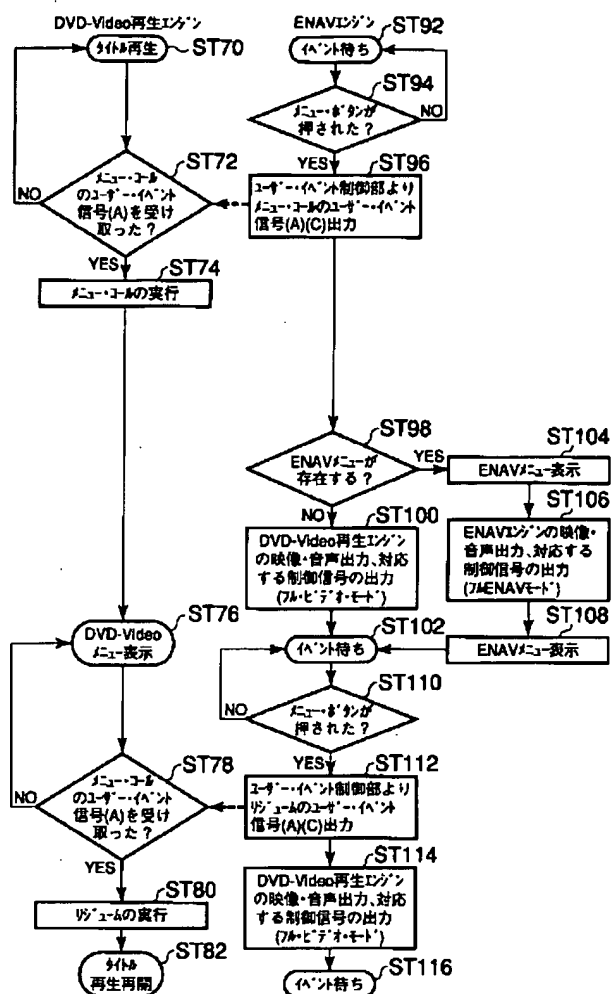
[Drawing 13]



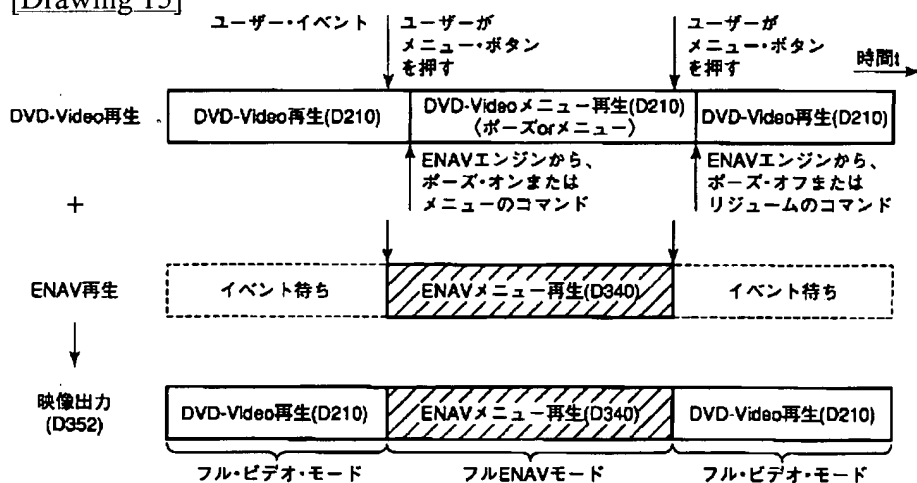
[Drawing 29]  
[移行ルール1]

現モード	切換イベント	遷移先モード	同時イベントの優先度
M1	E02	M2	E05 > E02
	E05	M3	
M2	E01	M1	E03 > E01
	E03	M3	
M3	E06	M1	E06 > E04
	E04	M2	

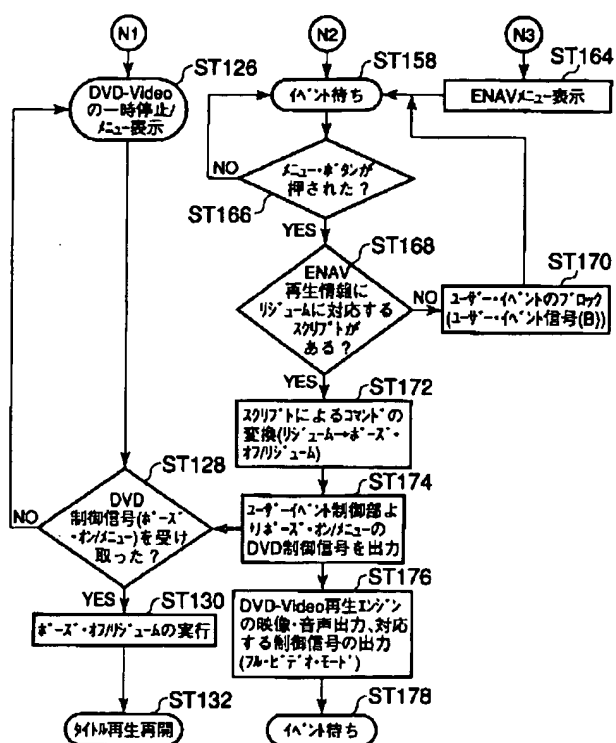
[Drawing 14]



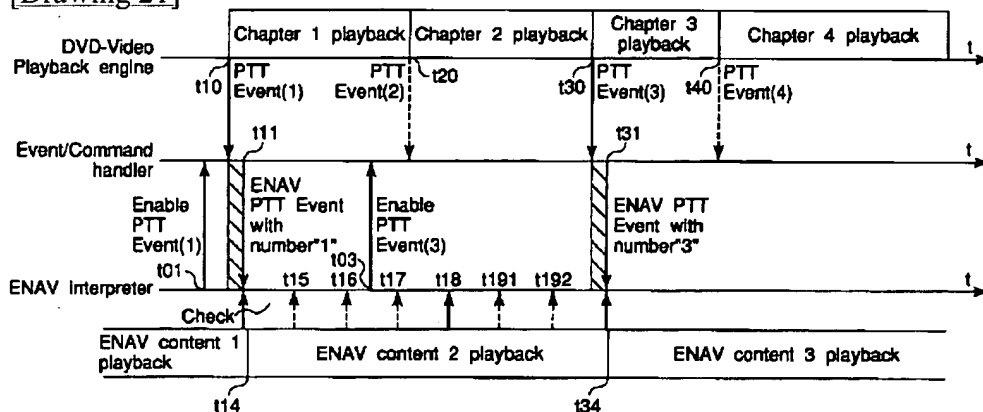
[Drawing 15]



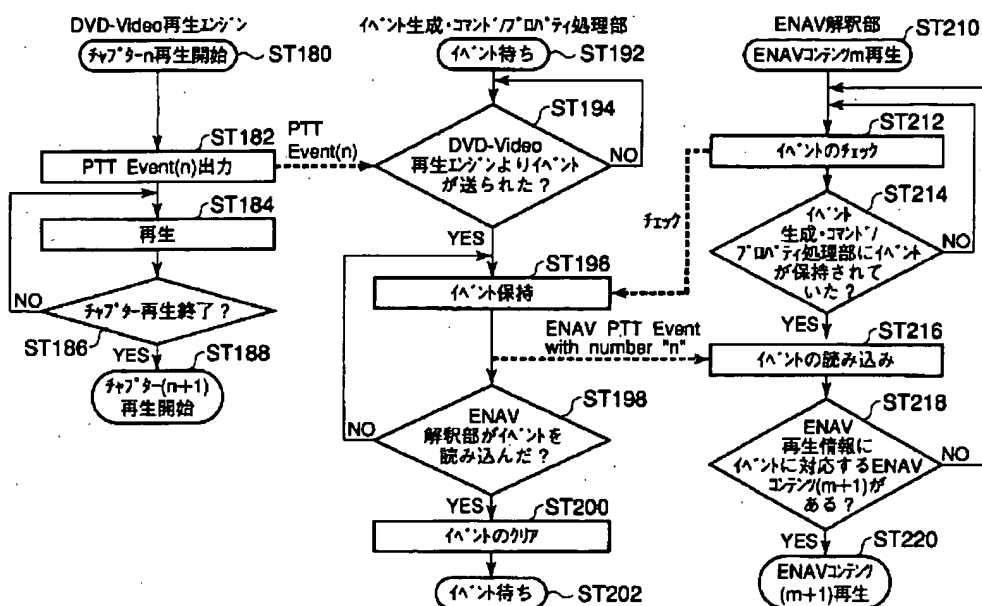
[Drawing 17]



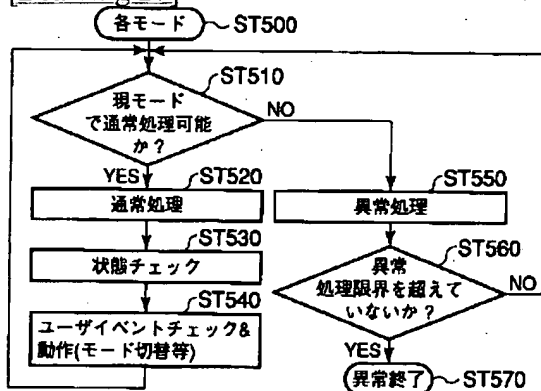
[Drawing 21]



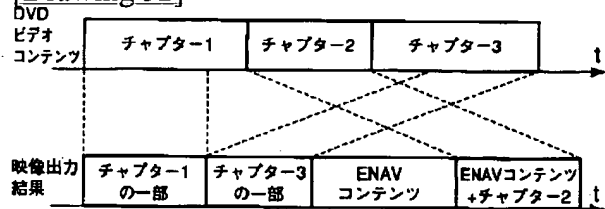
[Drawing 22]



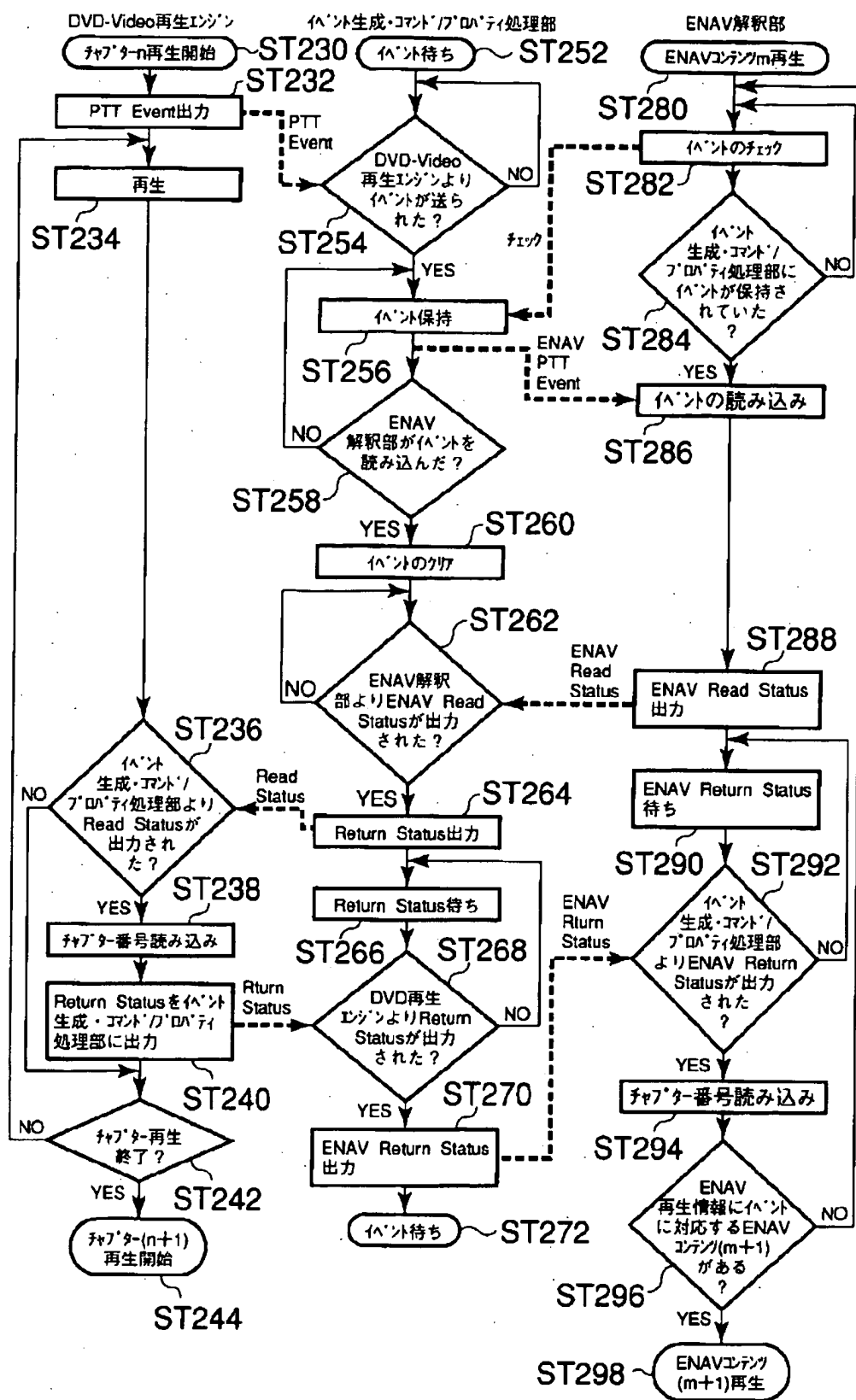
[Drawing 27]



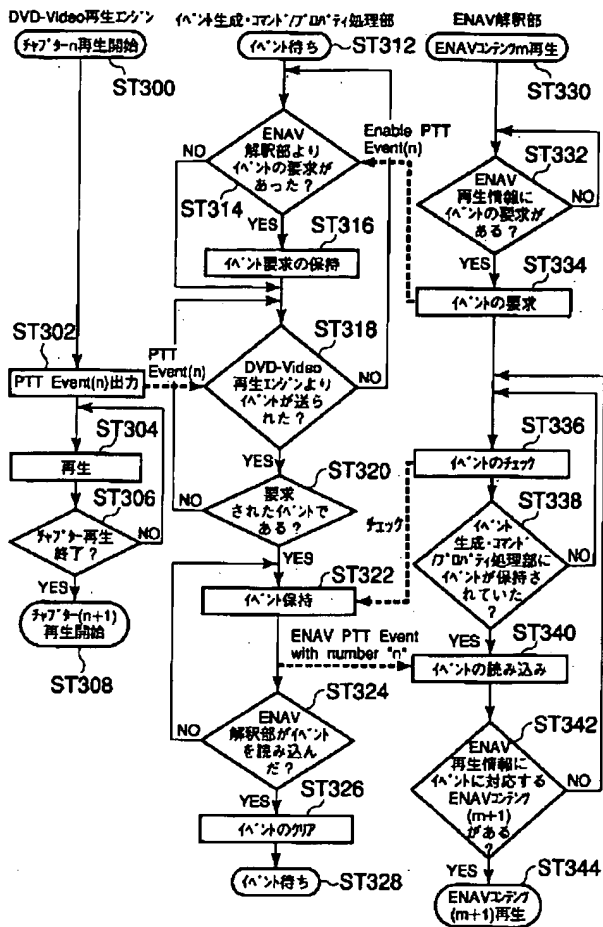
[Drawing 32]



[Drawing 23]

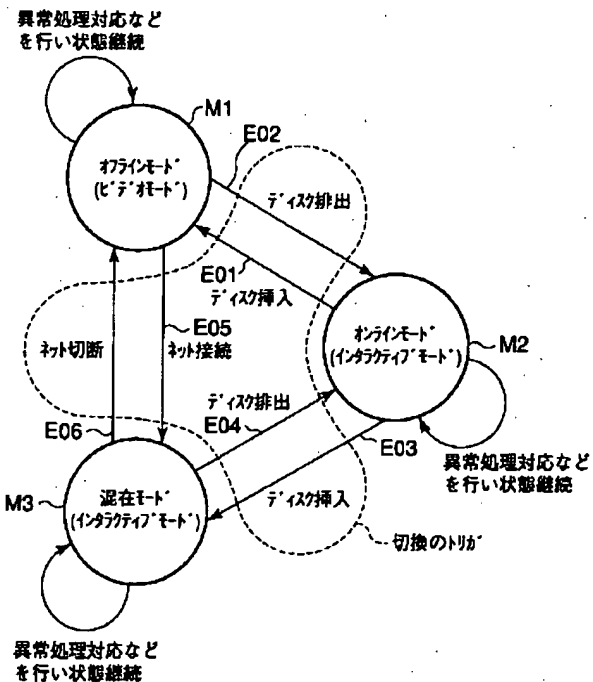


[Drawing 24]



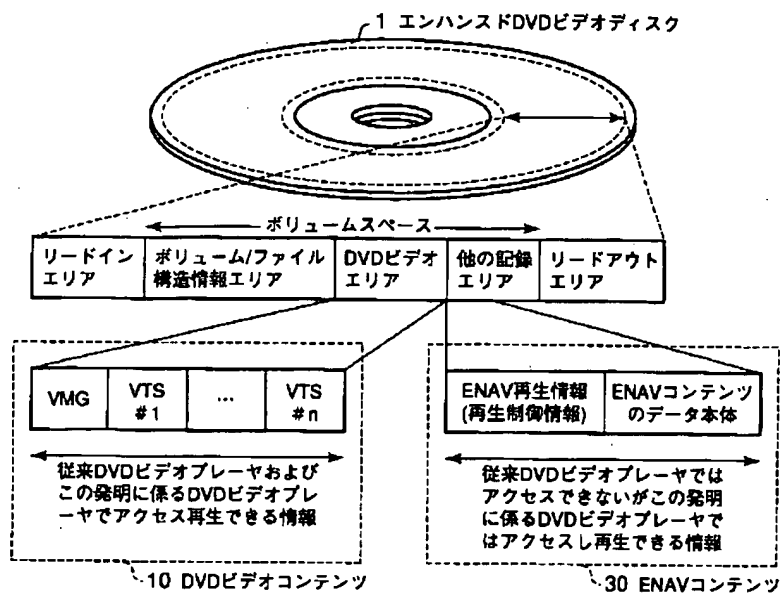
[Drawing 25]

(遷移可能なバス)

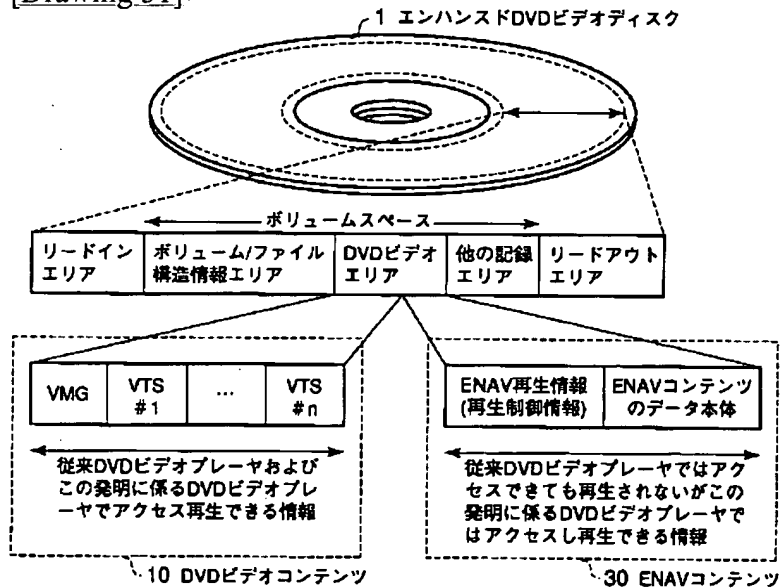


[Drawing 30]

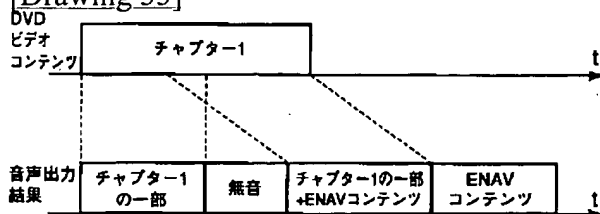




[Drawing 31]



[Drawing 33]



[Translation done.]